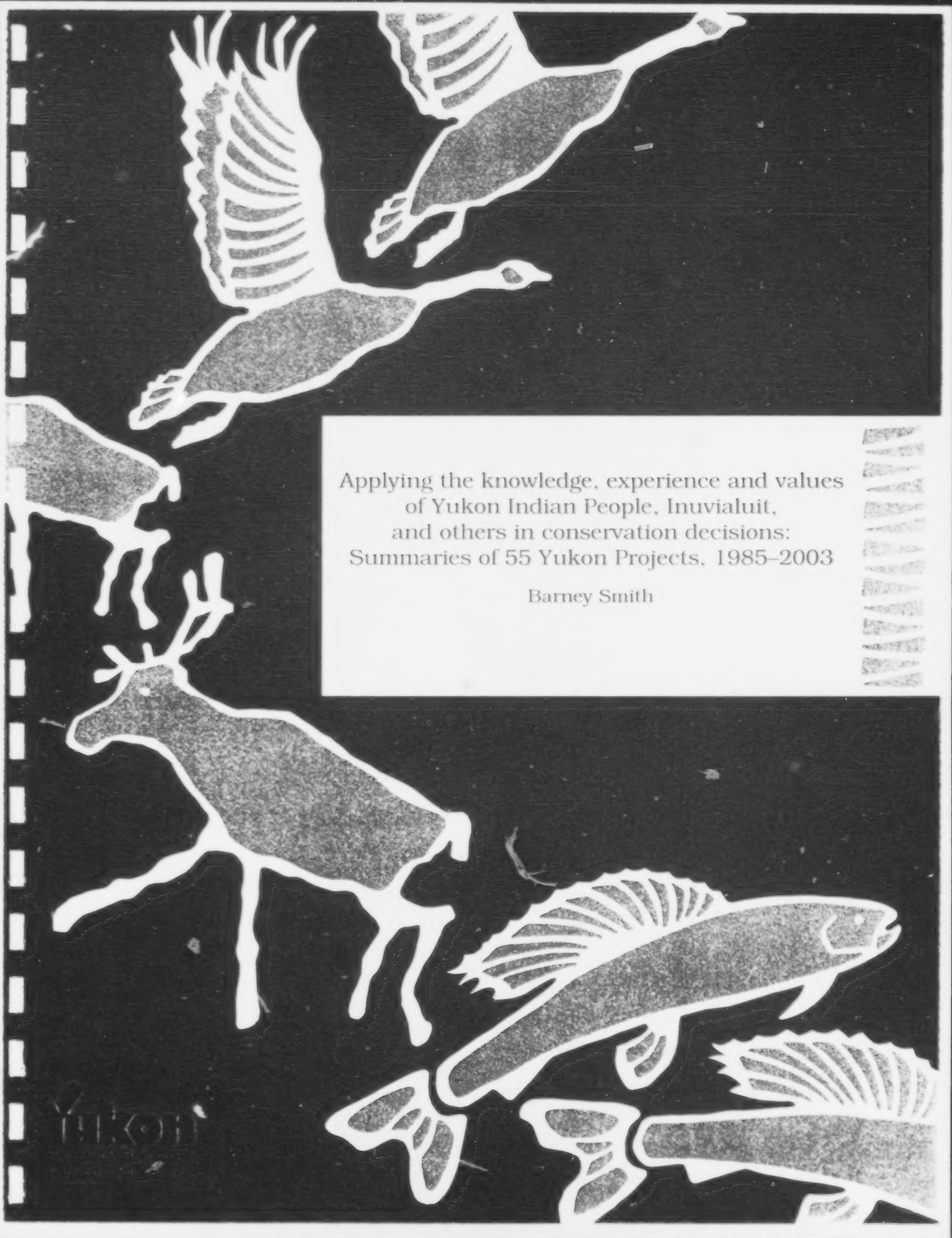

Applying the knowledge, experience and values of Yukon Indian People, Inuvialuit, and others in conservation decisions: Summaries of 55 Yukon Projects, 1985–2003

Barney Smith

Yukon

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Applying the knowledge, experience, and values of Yukon Indian People, Inuvialuit, and others in conservation decisions: Summaries of 55 Yukon Projects, 1985–2003

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ACKNOWLEDGEMENTS

I compiled short case studies of these projects between 1998 and 2000 to examine methods we had been using to do local and traditional knowledge research. The aim was to compile a set of lessons, examples, and training materials for the Fish and Wildlife Branch at the request of then Director Art Hoole. I am grateful for this opportunity. People involved in these projects patiently provided information in interviews and later edited drafts. Converting these into a usable plain language format was a lot of work, and I appreciate the design support from Jean Carey, and editing work by Teresa Earle and Graham McDonald. I appreciate Brian Pelchat's encouragement with this project.

People sometimes disagreed on what had happened in some of these projects, most often in the sequence of events and other aspects of how the problem and the background were described. I chose to simplify this text, since the point of these summaries was not to tell the story of each project, but to describe the methods. The stories are important, however, and I hope they find their way into narrative form for future use. There are bound to be people who feel I got it wrong — I hope the methods are right.

In every situation individuals looking back now would have designed and handled the projects a little differently. However, these projects all occurred in specific contexts, and opportunities to do studies in different ways were often not available. Individuals doing this work were learning about social science methods and how to collaborate with local experts and First Nation and Inuvialuit governments. We all thank these individuals for their patience, creativity, and support as we all learned and continue to learn new and better ways to work together.

Thanks are extended to Johanne Koser, Art Johns, Joe Johnson, Georgina Sydney, and Doug Urquhart, members of the Yukon Fish and Wildlife Management Board's Traditional Knowledge Working Group, for their steady insistence that we have to put more effort into "really listening to" hunters, trappers, elders, and outfitters. Final thanks go to several social scientists for their encouragement and ideas, particularly Julie Cruikshank, Ruth Gotthardt, Gary Kofinas, Lindsay Staples and Jim Tousignant.

INTRODUCTION

The settlement of the Inuvialuit and 9 First Nation land claim final agreements has profoundly changed how fish and wildlife populations are managed in the Yukon. Each agreement requires that conservation decisions apply the knowledge and experience of both aboriginal people and scientific communities. Developing practices and systems that honour this objective has been new and challenging work for everyone involved.

By sharing our experiences over the past 20 years, we hope others will reflect on how they can advance the quality, quantity, and relevance of their efforts so that conservation decisions truly reflect both ways of knowing.

This report describes methods in 55 examples. Each example is written plainly and described in a long title that outlines the region, species, method, and year. Each example is formatted as a stand-alone document, so it is not necessary to read them in order. Examples are grouped by method and sorted by year, and an index allows readers to search for key words. Individuals are named so that they can provide insights and support future work. Some have had several different roles over this period, as indicated by their titles.

Readers should appreciate the following points:

1. All interview work with Yukon First Nation and Inuvialuit people follows procedures and permission processes they have established. Additional interviews should precede any cross case analyses of the examples in this collection. Rules about appropriate uses of traditional knowledge continue to evolve in many First Nations.
2. Not all of the Yukon work in this topic area is presented here. This report includes examples that illustrate different approaches, significant lessons, and actual decisions. It builds on the 1998 *Two Eyes-One Vision* conference hosted by the Yukon Fish and Wildlife Management Board. More work is needed to document the underrepresented examples in this compilation. For example, those which
    - involve conservation decisions made by a Yukon First Nation;
    - involve Inuvialuit;
    - apply questionnaires or deal with harvest monitoring;
    - assess industrial developments and land uses;
    - conserve salmon, heritage resources or languages;
    - demonstrate policy creation by large and small groups;
    - demonstrate a process of regular meetings of a board, council or committee where members shared values and ideas to arrive at a recommendation;
    - illustrate where government personnel in communities apply ideas learned informally from many sources;
    - concern special and habitat protection areas;

- involve field trips; and,
- involve conservation advocacy groups.

3. Sophisticated multidisciplinary projects led by Gary Kofinas are described well elsewhere. These have applied many methods, notably focus groups, interviews, and computer modelling with groups including community experts and academics.

4. The methods used in these examples generally arose through discussions within small circles of trust. Community members, who understood what would be seen as appropriate and workable, selected the process and facilitator. Funds were usually limited. People did not readily accept methods or new faces from other areas.

5. These learning processes are usually complicated. It is rarely possible to meet everyone's expectations. Having an accurate summary of shared knowledge and experience is one thing — having an equal say in every decision is another. Legislation can be a blunt tool to implement sophisticated ideas.

6. The physical and cultural setting of the Yukon has influenced these projects.
   - Communities have populations of 300-1000 people, over half of who are aboriginal. Population density is about 1 person per 1000 square kilometers and there are very few roads.
   - Many people are still recovering from experiences at residential schools.
   - Land claims negotiations have gone on for 30 years, and implementation of agreements is taking some time.
   - Trapping lifestyles are fondly recalled but in many areas are no longer economically viable
   - The majority of families depend on wild meat and fish.
   - Large mammal populations have fluctuated 2 to 10+ fold since 1900.
   - People are reacting to substantial changes and variations in the climate.

7. Individuals involved in this work welcome encouragement and new ideas through easily read reports and through visits. All would modify the approaches used in these examples if they were doing the projects again. They are willing to share their ideas with those who take the time to visit.

Honouring our community experts and our wildlife is important. There is always room for improvement. We also need to honour the people who are trying hard to truly apply the knowledge, experience, and values within a community to fish and wildlife management.

Delphi Method

Delphi application to learn about how to do shared natural resource management: UNBC graduate project, 2000–2002.

Background

- Between February 2000 and July 2002, Erin Sherry (doctoral student at the University of Northern British Columbia) successfully applied the Delphi Method to the question of how best to do shared natural resource management in the north Yukon.
- The Delphi Method is a structured communication process to generate and examine ideas, and to help make decisions. Invited experts individually go through a series of carefully designed thinking activities: there is no face-to-face interactive communication. These activities allow thoughtful reflection and produce many high quality ideas that are anonymously summarized and given back to the group to review.
- Erin modified the research methods to make them suitable for both scientists and elders.

Methods

- Erin explained the project and asked individuals in the Vuntut Gwitchin First Nation (VGFN) and Yukon Government to nominate expert participants. She invited these 15 VGFN (elders, VGFN Government staff, and others), and 15 Yukon and federal government experts to participate. All but 1 government person agreed.
- Participants selected codenames. They described their backgrounds. These went into a *Getting to know you* booklet that contained biographies, a Delphi Project Glossary that helped participants consider ideological and semantic differences and encouraged a common working language.
- In the first Delphi Round, Erin interviewed everyone about their ideas on the topic with a tape recorder and returned a copy of their transcripts.
- Erin looked through the transcripts and identified *problems* and *opportunities*.
- In the second Delphi Round, individuals looked these over, rated them, and suggested solutions. These ideas were compiled in a 30-page workbook that included summaries and quotes with the codenames.
- Erin sent out a summary of the solutions and ratings in another workbook, and asked for comments and ideas on how to implement solutions.
- Elders were asked the same questions in Gwitchin by community researcher Mary Jane Moses.

- A team of translators and interpreters in Old Crow made sure that the ideas were accurately exchanged. This took a lot of time.
- In each review, participants were also asked questions about the process and encouraged to send ideas to each other. At the end there were 3 evaluations covering the methods, impacts on the participants, and the set of ideas in the report summarizing the group's views on shared natural resource management.

Notes on collecting the information and ideas

- Government experts received the request for comments by e-mail and courier.
- In Old Crow, some individuals received similar packages and others (elders) were interviewed by Mary Jane.
- Erin had incentives for participation, including honoraria to community members ($75 per round), and small gifts to government participants (pins, scarves, t-shirts, a book, and leather binder).
- The time between when participants raised ideas and received summaries varied and was longer than planned, due to unforeseen factors in Erin's life. The proposed 7-month research process turned into 18 months.
- Some participants found it was lonely to sit and type ideas into a computer.
- There was no analysis done comparing the responses by the type of expert (federal, Yukon, or Vuntut Gwitchin).
- Erin's 434-page doctoral dissertation describes the methods and the ideas raised, and discusses them in relation to ideas in other publications.
- Erin wrote a 23-page summary that accompanied her presentations in Old Crow, Whitehorse, and elsewhere.
- Erin's research showed that being part of a Delphi process was useful and insightful for all participants. The collected set of ideas reveals that shared natural resource management requires careful selection of representatives and a lot of attention to many aspects of the design of the work.
- To ensure that the concepts were communicated between participants as accurately as possible, Erin employed a community researcher and skilled local translators. The community researcher, Mary Jane Moses, was selected by the VGFN Natural Resource Department and VGFN Chief and Council. Although elders can speak English they could more clearly and fully express their perspectives in Gwitchin. Elders believed this project could increase Gwitchin literacy in Old Crow through training in language use and publication of Gwitchin reading materials for learners that were grounded in local culture. Some VGFN experts requested follow-up interviews to elaborate and clarify particular information. Appropriate

cultural translation of questions and feedback required much attention to translation and direction from elders in language use. Elders received questions at least 2 weeks in advance of their interview. So that all elders were asked the same question in the same culturally appropriate way, translated questions were recorded on a cassette tape and played to elders during interviews. The content analysis used the original words of the experts. Erin prepared the summary from this analysis for government experts. For community experts the community researcher and translators worked with Erin and elders to simplify technical words, reword complicated sentences, shorten sentences, reduce the volume of text, and emphasize the use of examples provided by Delphi experts. For elders, this version was translated and read onto a cassette tape.

- Elders' workbooks had larger print (14–16 point font) to make them easier to read, a more informal type face (Comic Sans MS) and lots of white space on each page. Coloured pages dividing sections and photographs of local people, plants, animals and landscapes stimulated experts to 'turn the page' and provided relief from the text.

Notes on using the information and ideas

- The participants described their learning as part of the study, and this learning undoubtedly influences their work in shared natural resource management activities.
- Some of the expectations, for example spending time together on the land, are difficult for government staff to apply given their workloads.

Other outcomes

- Erin widely distributed copies of her thesis to make the ideas available to individuals and agencies.

Other resources

Sherry, Erin E. 2002. Constructing Partnership: A Delphi Study of Shared Natural Resource Management in the North Yukon. Dissertation, University of Northern British Columbia, Prince George, British Columbia, Canada.

Sherry, Erin E. 2002. Constructing Partnership. Delphi Project Presentation. University of Northern British Columbia, Prince George, British Columbia, Canada. 23 pp.

Focus Groups and Group Interviews

Focus groups predict caribou reactions in scenarios: Dempster Caribou, 1999

Background

- Members of the Porcupine Caribou Management Board (PCMB) have frequently asked whether snowmachine use, traffic, and hunting near or on the Dempster Highway are harming the Porcupine caribou herd.
- Long-term responses are difficult to measure. Community members are often uncomfortable with intensive collaring and helicopter use. Therefore, the question posed by the Board has not been addressed.
- In the fall of 1999, Dorothy Cooley (Yukon Fish and Wildlife Branch (YFWB) Northern Regional Biologist) and Barney Smith (YFWB Public Involvement Biologist) proposed a process where experienced hunters would be asked to provide insights into these questions based on their experiences hunting and travelling on the Dempster highway.
- The challenge was to develop a process that met the needs of the communities to feel that their experts were being listened to, the needs of researchers to structure discussions to minimize variation in interpreting the effects of particular factors, and the needs of both for a time efficient and accurate way to have expert-to-expert discussions.

Methods

- The *local knowledge focus groups* approach sought predictions of experienced hunters about how caribou would respond in scenarios. The scenarios were precisely described by an independent facilitator, and were set in specific areas known to the participants.
- The method was introduced to the focus groups as an experiment, with the coaching of Jim Tousignant (the Yukon Bureau of Statistics Senior Statistician).
- A variety of situations were proposed in the scenarios, involving varying intensities and patterns of hunting, traffic, and snowmachine use.
- Nansi Cunningham (contract facilitator) worked with the biologists and COs who knew the area and drew a diagram of each scenario on a 60 by 100 cm sheet of paper. As she described the scenario to the hunters she placed cartoon-like sketches illustration each important point in the starting situation in the scenario. These illustrated things like herd size, vehicles, number of hunters, number of shots, wind direction, time of day, and cloudiness. Nansi then asked the hunters to say how the caribou would react. After they had answered this, she would remove a small sketch from the diagram of the scenario and replace it with another. She then asked hunters how the reactions of a group of caribou would change from the

original reaction. For example, "What if there were 300 instead of 15 caribou in the group? Based on your experience, would the caribou respond any differently?"

- The results were compared across factors to see the pattern in responses, and summarized in a long report.
- Similar focus groups held with conservation officers and caribou researchers also used scenarios to structure the discussions.
- A report outlined the influence of various factors as seen by these groups.

Notes on collecting the information and ideas

- Barney and Dorothy set up criteria to screen individuals for particular sessions. The criteria related to the individual's experience hunting caribou on the Dempster in terms of month, year, location, and equipment used for hunting.
- Participants were comfortable with the highly structured interview-based research process using focus groups. After the session, the tape recorder was turned off and Dorothy and a conservation officer answered all questions.
- Collection of *predictions* not *observations* emphasized hunters' pattern-forming thinking and understandings.
- Each of the 10, ninety-minute sessions led to 1000–1500 lines in the transcript. Three individuals independently examined the transcripts, seeking lines that described responses to particular effects within each scenario. This group later compared interpretations on summary sheets and an analysis table. The analysis table was 2 by 7 m.

Notes on using the information and ideas

- It took several years to find the time to complete the write-up of this work. Because the process was novel Barney and Dorothy had to learn how to do the analysis.
- The PCMB appreciated several verbal briefings on this work. One member became upset at discussions of some of the hunting strategies the hunters said they used.
- The research process was useful in clarifying the different hunting strategies that hunters employed.

Other outcomes

- This was the first application of so much structure into a group interview or focus group process, and it widened the norms in how much direction individuals and groups would tolerate.

Other resources

Barney Smith and Dorothy Cooley. 2003. *Through the Eyes of Hunters: How hunters see caribou reacting to hunters, traffic, snow machines near the Dempster Highway, Yukon.* Yukon Fish and Wildlife Branch Report MR-03-01, Whitehorse, Yukon, Canada.

Using local knowledge focus groups. A paper by Barney Smith, Dorothy Cooley, Jim Tousignant and Nansi Cunningham presented at the AAAS meeting in Whitehorse, September 2001.

Focus groups of trappers examine habitat use: Liard trappers describe high marten use sites and predict reactions, 2002

Background

- Marten live in forested habitats across North America and many of these forests have been logged or used in other ways. In boreal forests that burn at 40 to 200 year intervals, marten use certain types of regenerating burns and certain types of forest. They do not use recently logged areas.
- Marten are the most important species in the fur trapping economy in the boreal forest, particularly in the extensive forests in the Liard River area of the southeast Yukon. Trapping families there worry that increasing the land areas that are logged will jeopardize their trapping lifestyles.
- To get some useful information to plan forest uses to maintain abundant marten, a 2-pronged study was begun in 2001. One part of the study looked at the pre- and post-logging movements and survival of marten in 2 different forest cutting systems. The second part was a series of focus groups with experienced trappers in the region to learn about their understanding of how marten used forests of different age, structure, and plant types. This summary covers the local knowledge focus groups with the trappers.
- In the 1980s Yukon biologists completed studies about marten ecology in the Sidney Creek area off the Nisutlin River.
- In the 1990s Alaskan biologists used questionnaires to learn about trappers' views on how marten use burns. NWT biologists interviewed trappers about marten ecology in the Mackenzie valley.

Methods

- Jan Adamczewski (Yukon Fish and Wildlife Branch (YFWB) Liard Regional Biologist) and Barney Smith (YFWB Community Information Specialist) discussed many possible roles of trappers in the research project as they worked on the proposal for the study. They discussed these ideas with Liard area trappers in Watson Lake and at the Kaska Nation Frances Lake Healing Camp. Trappers were keen to help. They wanted notebooks (and funding?) to record marten sign, and researchers to travel with them on their lines.
- Laurie Allen (Lands and Resources Manager with Liard First Nation (LFN)), Liard MacMillan (LFN Land and Resource Officer) and Eileen Van Bibber (Kaska trapper) met with Jan, Barney and Brian Ladue (YFWB Regional Technician Trainee). All wanted to see a role for trappers in the project and agreed it would be good to start with some meetings.

- Jan set up the first focus group with 8 trappers, at the home of one of them in February 2002. He selected the trappers based on their long experience with marten trapping. The meeting began with dinner.
- To provide a structure to help in the write-up, trappers did several activities in the 2-hour session. They first sketched an aerial view of the best valley bottom site for marten on their line, and wrote down reasons why. They described this in turn to the others - there were many questions because the areas often had quite a different mix of plant species. This continued for upland and young forest areas on their line. Probing questions asked "What is there about this place that makes it good for marten compared to other areas on your line?" and "Why?"
- Later, the trappers rated the relative abundance of marten in the 3 sites on their line, assuming the valley bottom site was rated as a "10".
- The transcript from this meeting included trappers' sketches and notes. It was completed within 3 weeks of the session.
- Jan and Barney studied the transcripts. Jan prepared a list of the elements that were in common with good and poor marten areas. Barney prepared a table of the ideas or theories that trappers advanced to explain how the marten used the landscape and how they would respond to change. Jan and Barney wrote a report that described what made good and poor marten habitat. This report included photos provided by 2 trappers, summaries of the trappers' experiences, and references to technical studies.
- More focus groups were planned with other groups, but these were delayed due to everyone's busy schedule. Barney designed 5 additional activities for these future groups. Each activity design had a learning goal, how the activity would be explained to the group, how the results would be reported, the qualities needed in the individuals for the activity to work (screening criteria), and details of each activity. The additional activities were:

    1) ranking preferred foods by season;
    2) predicting the numerical and behavioural responses of 50 marten in a particular valley to 30 different changes;
    3) seeking group review of patterns written as statements on cards;
    4) mapping old logged sites and describing site treatments; and
    5) review of diagrams of how marten might respond to certain spatial patterns of disturbance.
- Trappers received draft copies of the report and transcript in August 2002, and were encouraged to provide comments.

Notes on collecting the information and ideas

- February – April may be the only time when a group session is possible. At other times trappers are in the bush or working at other jobs. The group interaction added a lot of depth to the discussions.

- Trappers understood what was required. All were comfortable sharing ideas in this familiar setting.
- The collection, transcription and reporting went quickly. Jan's role as content specialist could not be replaced.
- The trappers raised dozens of ideas about how marten respond to burns and logging that will need to be discussed in detail at future meetings. This set of trappers may be unusual in how observant they are in detecting patterns and how creative they are in coming up with theories to explain these patterns. Discussions at the pattern and theory level were exciting for all the participants. The trappers all were concerned about unusually low numbers of marten throughout northern British Columbia and the Yukon in the 2001–2002 trapping season.

Notes on using the information and ideas

- The ideas from these trappers raised the importance of terrain features and also how much variation there was in forest types in the region.
- The relative abundance and variation in marten abundance in upland forests from trapper ratings was much higher than expected; this may influence forest planning.

Other outcomes

- The trappers sought details about the scientific study design. They identified weaknesses and suggested alternative designs. A future session will look at the design in detail.
- This research process is going to evolve. What we envisioned as a series of focus group sessions with structured activities may evolve into a community expert steering group for the project. A flexible approach with a focus on the long term is important to sustain trapper participation.
- Forest planning often is based on maps showing important areas for particular animals. The maps are based on forest cover maps and assumptions about how important a particular forest cover type is to the animal species. In 2002, forest-planning consultants prepared a map of habitat suitability for marten for the Teslin area. It was based on studies of marten in Alberta where important habitats were older forests in valley floors. The Liard area trappers suggested different habitats were important. Maps based on models that use their ideas would look very different.

Other resources

What makes good marten habitat in the southeast Yukon? A summary of 8 trappers' ideas from a February 2002 focus group. A Yukon Fish and Wildlife Branch file report by Jan Adamczewski, Barney Smith, and Brian Ladue.

Focus groups identify and describe issues: Carmacks regional wildlife plan, 2003.

Background

- Regional wildlife plans are a post land claims tool to schedule and coordinate actions by the First Nation and Yukon governments, and the Renewable Resources Council (CRRC) within a first nation's traditional territory.
- These plans *address concerns, solve problems, commit to work*, and *improve situations* involving human uses of wildlife and their habitats for a 5-year period.
- Knowledgeable community members know about important concerns. They also have ideas on the relative importance of these concerns and what governments and others should do.
- This summary describes the first application of focus groups to the identification and description of concerns in a regional wildlife plan. It was perceived to be successful by governments and CRRC members and participants. Prior to this work, issues had had been identified through household interviews, community meetings, questionnaires, and at facilitated information sessions that preceded the planning workshop.

Methods

- RRCs usually take on the task of identifying community issues in a regional wildlife plan Terry Hanlon (Carmacks RRC Chair) and Selena Cheater (Carmacks RRC Executive Secretary) selected and hired Bob Hayes (facilitator) to lead the planning and the focus groups. Bob had experience with a dozen plans, had facilitated 2, but was new to focus group facilitation.
- Selena, Terry, Mark O'Donoghue (Yukon Fish and Wildlife Branch (YFWB) Northern Tutchone Regional Biologist), and Susan Davis (Little Salmon/Carmacks First Nation (LSCFN Director of Lands and Resources) divided the 23,000 square kilometer traditional territory into 6 areas. They identified individuals who knew a lot about each area.
- Terry and Selena invited these individuals to each session by telephone and personal visits. They asked them to come for 2–3 hours for lunch and to identify concerns that would go towards a 5-year plan for fish and wildlife management. Most people they spoke with were not familiar with wildlife planning or focus groups, but most were willing to come and help, if they could find time in their busy spring schedule. The offer of a travel bonus of $100 helped.

- At each session there were 3–4 participants, 1–3 CRRC members, Bob, Selena, 0–2 LSCFN personnel, and 2–3 YFWB staff (Mark, Karen Clyde (Fish and Wildlife Planner), and Barney Smith (Community Information Specialist).
- In most sessions all participants understood the concept of a concern or issue, and described them in detail, with examples from previous and recent experiences in the area.
- Karen took notes on a laptop computer and audio taped the sessions. A student contractor later transcribed the tapes for $200 each.
- Everyone knew this was the first time focus groups had been used to identify issues. There was a lot of discussion of what was working and what should change, process notes were kept, and a meeting at the end of the sessions (and a file report) looked at the process.
- The final summary of the issues was longer than in other plans, but was very thorough, and included quotes. RRC members felt the quotes gave the plan a feel that it really came from the community.

Notes on collecting the information and ideas

- Bob paid much attention to the comfort of participants. He did not rush them, or interrupt, and let the conversation describing an issue wind down before prompting on another species or topic. He modified the approach to ask people to talk about the issues or concerns in the area that they felt most strongly about. Some individuals appeared to think they were there to tell people about animals in the area.
- Participants sought information about this new plan, how they would be involved and what it would accomplish.
- Audio tape transcribers lost some words from soft speakers and when several people spoke at once. In one tape about one quarter of the words were inaudible, but in other sessions few words were lost.
- Prompts seeking examples of how frequent certain activities or sightings occurred were useful to put numbers on situations.
- Each transcript had about 1060–3530 lines and took about 3–4 hours to analyze. There are no names on the transcript.
- Anonymity is often important to identify all concerns, especially those that people may be nervous to raise at a public meeting. Bob did not offer a separate process where participants could anonymously raise other issues. CRRC members and participants did not feel this was a problem.
- Participants and CRRC members looked over the session summaries over the summer.
- Future use of the transcripts will be at the discretion of the CRRC.

Notes on using the information and ideas

- Three individuals (Karen, Mark, and Barney) each prepared a summary of one of the most complex sessions. CRRC members and others studied these and selected a final format that included all issues raised, grouped them by species, and included quotes beside the text to show how the issue was described by the area expert.
- These concern-gathering workshops helped the session participants gain a common understanding of issues within the area. The CRRC members who sat in on a number of sessions appreciated the learning opportunity. Ideally, successful planning requires a shared and thorough understanding of each issue in all areas, by all the participants. The long report combining all the issues is a start.

Other outcomes

- These focus groups broadened our understanding of small group interview procedures and the use of quotes in regional plans.
- Focus group procedures have a very high 'face validity' to participants. This means that people who participate come away feeling confident that the process yielded thorough and accurate perceptions of the situation being discussed.
- The goal of ensuring that these planning processes are truly community-based is important. This process was important in helping CRRC members and others feeling they had really heard the concerns. One CRRC member commented that these small group interviews allowed them to hear from people who would never come to a public meeting or workshop.

Other resources

Using focus groups to describe concerns in areas within regions in community fish and wildlife planning: Little Salmon Carmacks, March to June 2003. Yukon Fish and Wildlife Branch file report by Barney Smith, Karen Clyde, Mark O'Donoghue, Bob Hayes and Selena Cheater.

Group Mapping

Group mapping of seasonal ranges at 1:50,000 map scale: moose in the Dezadeash and Cloudy Ranges - 1996

Background

- Champagne and Aishihik First Nations (CAFN) and the Yukon Fish and Wildlife Branch (YFWB) held this 1-day session in March 1996. The mapped information was for a plan for managing moose across the borders of British Columbia, Yukon, Kluane National Park and Tatshenshini-Alsek Provincial Park.
- Biologists needed information on where moose were found in early winter and where they moved each season. Then they could decide where more studies might be needed, and how best to keep track of moose movement. They wanted to locate areas where moose could be counted in late winter every year or two to track changes in numbers and composition.
- Linaya Workman (CAFN Renewable Resources Officer) organized the session with Doug Urquhart (contract facilitator). Mike Crawshay (Chair of the Alsek Renewable Resources Council), Bob Hayes (YFWB Kluane Regional Biologist), Lawrence Joe (CAFN Director of Lands), and Barney Smith (YFWB Public Involvement Biologist) helped to conduct it.

Methods

- Linaya and Mike invited people who knew moose and the area well. This included elders who had travelled in the area before the road was built in the mid-1940s, grader operators who had maintained the highway for many years, experienced hunters, and hunting guides.
- When people arrived in the bright CAFN Elders Complex, Linaya explained that the information collected would be used to figure out where to do regular airplane surveys to count moose. Their information would also be used to help make a plan for moose in that area.
- Linaya asked people to sit at 1 of 2 mapping stations, with 6 to 10 people in each group.
- Each group sat close to a large map of either the northern or southern half of the Dezadeash and Cloudy Ranges. The size of each map was 2.2 metres by 3 metres, with a scale of 1:50,000, made from taped-together topographic maps. On these maps pale green means vegetated areas. The pale blue creeks and contour lines are usually too pale to see from a distance. They highlighted and named roads, rivers, and camps with felt pens to help people orient themselves.
- For each mapping station a CAFN mapper who knew the area drew the ovals (polygons) that people pointed out. A recorder sat beside the group, facing the map and mapper.

- The mapper drew ovals on the map where elders said that moose were found at different times of year. Each oval was numbered so that the recorder could write down information on a separate sheet. The sheet had 5 columns: the number of the oval, the name of the elder, the season when moose were found there, moose activity, and other comments. Recorders were asked to use codes for some columns. There was no column for how many moose people normally saw in these places. Recorders had a hard time writing down all the information because it came in so quickly for the first 60 to 90 minutes. Most of the information was written down quickly in the comments box, and later recorded properly.
- People stayed for a hot lunch. They were not paid.
- Some people wanted to give information privately, so that others could not hear or see it on the maps. Linaya met them separately, and worked with maps they brought.
- Linaya entered all the information onto a computer program designed to handle map information (GIS), and kept the maps in a secure place away from her office.

Notes on collecting the information and ideas

- There was a lot of trust between the participants and staff in both governments. People provided a lot of information quickly because they wanted to see better management of moose in the region.
- Elders provided less information about the parts of the map in Kluane National Park. These parts include areas where elders no longer go, and areas where moose rut, so the information is more sensitive. When a person known as someone who sold moose meat briefly joined the group, people stopped talking.
- An outfitter who gave information privately on a map later saw new people from CAFN hunting in one of the areas he marked. He does not believe that the information in the CAFN office is secure. He will not provide additional information.
- Highway grader operators gave useful information about moose in remote stretches of British Columbia outside the normal hunting season.

Notes on using the information and ideas

- In one group, participants developed a theory about how moose move between seasonal ranges. These movements involve 4 highway crossings over the year, which had initially confused the group.
- The groups developed a broad understanding of how moose use the landscape -- not just the change in numbers of moose or the areas used in different seasons.

- Later airplane surveys of the early winter areas matched the information collected from these groups. Linaya defends the use of these airplane surveys because they build on the information on the maps from the workshop. It was important to some that the maps of where the moose were in late winter that came from the 2 sources were the same. The surveys were not done to verify the information- they were done to get a current count of the bull, cow and calf moose in some of these mapped areas.
- The information helps biologists better understand where killed moose come from at different times of year.
- The CAFN Lands Department does not allow anyone to see the information. The mapped areas were not entered into the Yukon Government's Wildlife Key Area database.

Other outcomes

- This was the first group mapping process and later efforts built on the lessons learned. Later sessions featured 2 recorders, more text, extra lights, clearer communication between recorders and mappers, fewer participants in each group, and maps with more prominent creeks and place names.

Other resources

Yukon Fish and Wildlife Management Board. 2002. *Two Eyes: One Vision Traditional Knowledge Conference held in Whitehorse April 1–3, 1998.* The presentation "Alsek Moose Management Plan" by Linaya Workman and Bob Hayes is summarized on pages 25–27.

Gender-specific bioregional mapping workshops: Teslin area, 1999

Background

- Governments and other groups approach Teslin residents to involve them in different and separate planning exercises such as:
    - Land use planning
    - Forest planning
    - Wildfire prevention planning
    - Fisheries and wildlife planning, and,
    - Protected areas planning and bioregional planning.
- Planners want to identify and describe community values, and gather mapped and other information on issues.
- With no overall land use plan, planners make decisions case by case with no common understanding of community values. Case-by-case decisions might limit future possibilities.
- Angela Walkley, under contract to the Association of Yukon Communities, talked to municipalities about developing bioregional maps for Yukon communities.
- Bioregional maps allow a community to describe its cultural identity and ecological setting from its own perspective. By combining the knowledge of many individuals, a full picture of "place " can emerge. These maps show places important to the community like wildlife viewing and rearing areas, plant concentrations, berry picking sites, forests, and hunting and fishing areas.
- The maps use symbols to identify areas that are important to community members.
- The maps become a community resource. They are not made to promote a specific conservation or development agenda.

Methods

- Angela organized a series of information and training workshops on bioregional mapping in 1998.
- Members of the Teslin Tlingit Council (TTC) decided to find out more. Dr. Doug Abberley from the University of British Columbia and the Wets'aw Wataulth First Nation members had recently completed a bioregional atlas. The TTC invited Dr. Abberley and members of the Wets'aw Wataulth First Nation to Teslin to discuss their experiences. They also invited the Teslin Renewable Resources Council (TRRC) and 2 members of the Teslin municipal government.

- As a result of the session with Doug Abberley, the TTC, Town Council and TRRC held a community mapping workshop facilitated by Angela. The workshop was intended to provide participants with the skills to facilitate their own mapping sessions to record biophysical and cultural information related to the land around Teslin. The workshop included practical experience in creating maps and concluded with a discussion on how to organize follow-up mapping sessions in the community.
- The TRRC handled the arrangements and advertising for the first workshop.
- Twelve people took part in the workshop, produced a single map and discussed how to hold the follow-up sessions.
- In the spring of 1999 Juanita Sydney, TTC Wildlife Officer, organized 2 follow-up sessions, one targeting women and the other men. She advertised the meetings as social evenings to share ideas about values and land use around the community.
- Organizers advertised the women's session by word of mouth. It featured moose stew, bannock, and soapberry ice cream.
- For the meetings, Applied Ecosystem Management, a local consulting firm, prepared a base map at a scale of 1:50,000 that covered a 20-km by 10-km area around Teslin.
- People who had participated in the first workshop guided people through the second set of meetings.
- Each session worked on 6 maps to record important places of:
    - general interest,
    - wildlife habitat,
    - forestry developments or interests,
    - general developments,
    - fish and fishing, and
    - hunting and trapping.
- 15 to 20 people attended the men's meeting the following evening. They generated a number of base maps that noted various land uses.
- Applied Ecosystems Management created 8 computer maps based on the information gathered during the 2 workshops.
- They also trained TRRC members to use the hard copy maps and digital files.

Notes on collecting the information and ideas

- People went along with this mapping process because it was a unique opportunity to act together to control imminent bioregional disruptions from forestry, road building, depleted salmon stocks, and other events. The

proposing group (Association of Yukon Communities) had no land management or resource sector responsibilities or agenda.

- Local people led the later workshops and helped to build confidence and trust in the exercise.
- Community people planned the workshops and chose culturally appropriate ways to invite and encourage people to participate.
- Resource managers in forestry and wildlife offices encouraged men who asked about the meeting to attend.

Notes on using the information and ideas

- Local people see this bioregional mapping information as a foundational reference and resource. The TRRC has used it on numerous occasions and by forest management planning groups.
- The Teslin Integrated Wildlife Planning process used the maps to brainstorm the first issues list, reveal the large variety of issues, avoid abstraction in favour of clear images, and educate and elicit information from community informants. The TRRC displayed the maps in public places and referred to the maps when in doubt.
- This information was incorporated into the TTC spatial information library and is used as needed in initiatives at the discretion of TTC.

Other outcomes

- The people of Teslin, the TTC and its employees, and the Teslin Renewable Resources Council continue to work on planning issues.
- A household survey of values related to natural resource management was completed in 2000 for the TRRC by the Yukon Government Bureau of Statistics using the Galileo Model, a multivariate method for developing mathematical and graphical social consensus about group attitudes on a specified topic.
- The Teslin Integrated Wildlife Plan 2001–2004 was completed in 2001. This is an issue-based, not a map-based plan that schedules actions to address high priority wildlife problems.
- Ongoing forest planning, now done through a contract to a consulting firm.
- Regional land use planning is being led by the Teslin Land Use Planning Commission established under the Yukon Land Use Planning Council and Chapter 11 of the Teslin Tlingit Council Final Agreement.

Other resources

Bioregional mapping in Yukon Communities – Project reports for 1998 and 1999 prepared by Angela Walkley for the Association of Yukon Communities, Whitehorse.

Community of Teslin Multi-Year Wildfire Risk Reduction Plan. Final Report prepared for Teslin Tlingit Council, Teslin by Applied Ecosystem Management, TransNorthern Consulting, and Ember Research Services in 2000.

Teslin Renewable Resources Council Resident Survey: Talking to the People. Final project report prepared for the Teslin Renewable Resources Council by Yukon Bureau of Statistics in 2000.

Teslin Integrated Fish and Wildlife Management Plan (2001–2004): A community planning process. Available at http://www.yfwmb.yk.ca/comanagement .

Mapping Yukon/Alaska cross-border wildlife habitats: workshops with the White River First Nation and Northway Village Council, 1997 and 2001

Background:

- In response to community concerns that moose numbers seemed low in the cross-border area near Beaver Creek, Yukon and Northway, Alaska in the mid-1990s, a community workshop was held in Northway Alaska in October 1997.
- Participants in the workshop included representatives from the Northway Village Council, White River First Nation (WRFN), Yukon Fish and Wildlife Branch (YFWB), Alaska Department of Fish and Game, and the Tetlin National Wildlife Refuge.
- The purpose of the workshop was to record elders' information about where moose traditionally were found throughout the year, identify "key" habitats, and understand movements of moose in the cross-border region.
- Karen Clyde (WRFN Researcher) and Doug Urquhart (contract facilitator) organized the 1997 workshop. Bob Hayes (YFWB Kluane Regional Biologist), Craig Gardner (Alaska Department of Fish and Game Biologist, Tok area), and Polly Hislop (Refuge Information Technician, Tetlin National Wildlife Refuge) helped to conduct the workshop. Polly is from Northway and has close links to the Village Council (the equivalent of the WRFN government).
- In 2001, the same agencies held a follow-up workshop in Beaver Creek, Yukon. The intent of the second workshop was to report on how the moose mapping products from the earlier workshop had been used and to map additional wildlife species' habitats.
- The 2001 workshop was facilitated by Bob and Craig, and organized by Karen (by that time YFWB Fish and Wildlife Planner). WRFN Chief David Johnny introduced the session.

Methods

- The 1997 workshop was held in the Northway Village Council community hall. Black and white photographs (approx. 20" x 30") of White River people from the 1940s–1960s were on display in the hall and proved to be a useful ice-breaker for elders to get comfortable in the setting prior to the beginning of the meeting.
- Meeting participants were seated in front of a display of 1:50,000 scale maps assembled to cover the cross-border area encompassing the White River First Nation traditional territory and the area of use of the Northway Village Council citizens.
- An interpreter helped elders to identify traditional place names on the maps. This helped familiarize workshop participants with important

traditional places in the region and develop an understanding of areas typically used by workshop participants. Prominent landscape features and roads were highlighted with thicker lines drawn in with a felt pen. This helped participants to see these features when sitting 3–5 m from the map displays.

- The participants then split into 2 smaller groups – one for the Northway area and one for the Beaver Creek area. The groups were not formal and workshop participants casually moved back and forth between the 2 groups as the day progressed, reflecting their interest in and knowledge of both areas.
- Translators helped explain elders' comments as necessary.
- A note-taker and a mapper recorded elders' knowledge of important moose areas and movement corridors. A third person helped to move the discussion along, acknowledging the elders' comments and asking questions to direct the discussion as necessary. The role of the third person was found to be instrumental in holding elders' interest in sharing information (acting as the "uh-huh" person).
- Points (to identify camps or cabins), lines (to show moose movement corridors) or ovals (to identify areas of habitat) were drawn on the maps as the elders made their comments, and numbered sequentially. The numbers corresponded to the written notes on a chart-style recording sheet.
- The recording sheets contained columns for: map oval number, the speaker's initials, comments, the topic of discussion, species, place name, season of use by species, year, habitat function by species, names of people who may know more about the area, and the 1:50,000 scale map sheet number. Most often, discussion with the elders was primarily recorded using the map oval number, speaker initials, and comments columns.
- Not all elders were comfortable speaking in the group setting, so one-on-one discussions were held as necessary. In those cases, a mapper and note taker listened, recorded the information, and asked questions.
- Lunch and dinner were provided on both days of the workshop. Elders were paid honoraria from their respective First Nation or Council.
- At the end of the workshop, the Northway Village Council took the Alaska maps, and the Yukon maps were kept by the WRFN. The Yukon portion of the information was later entered into WRFN's GIS mapping system.
- The 2001 workshop was held in the Beaver Creek Community Hall. The format was generally the same, although low participation by elders resulted in more one-on-one interviews being carried out as elders arrived at the workshop.
- Some elders preferred to work on maps closely and horizontally (rather than vertical displays). In these cases, the map displays were tipped to lie flat. This helped elders to get up close, and walk around the maps.

- After the 1997 workshops, there were some difficulties in locating the original maps from the workshop. As a result, it was agreed that the 2001 Yukon maps would be stored at the Yukon Archives and the Alaska maps at the University of Alaska Fairbanks Archives). Viewing was to be only with approval of WRFN. As of 2003, the maps were not at these archives.
- In both workshops, additional "issue-based" discussion (i.e. comments that could not be mapped) raised key community concerns, and provided more detail about management concerns (for example, a request for a hunting season extension near Northway).

Notes on collecting the information and ideas

- Some elders were hesitant to participate in the workshop until they were clear on its purpose, how the information would be used, and where the information would ultimately be stored.
- Elders who participated provided good coverage of the entire region. Some elders who know certain local areas but could not attend the workshop may be able to provide further detailed information. These follow-up interviews were not done.
- Elders enjoyed the casual nature of the workshop and visiting with friends and family members. This likely contributed to their openness in sharing information.
- In both workshops, a flexible workshop format was integral to the success of recording information and providing a positive experience for elders to participate and share knowledge.
- Mapping was difficult if there was a lot of information. One of the 1:50,000 maps had one valley with 5 overlapping ovals. Additional maps for these areas or finer marking pens would have been useful.

Notes on using the information and ideas

- In the Yukon, the mapped products were useful for giving wildlife managers an idea of seasonal moose habitat use and movements. Early winter aerial moose counts done in 1996 and 1997 were compared with comments and mapped information from the workshop. They confirmed local concerns about low bull moose numbers. The low bull numbers were not throughout the traditional territory, but were focused in the Koidern area and near the Alaska Highway where roadside hunting has been identified as a local management concern.
- Future harvest management in the WRFN area could consider dispersing harvest pressure throughout the area, and avoid pressures on easily accessible areas.
- One of the key outcomes of the 1997 workshop in Alaska was the approval of a proposal to extend the moose hunting season for Northway residents.

Other outcomes

- Elders and biologists described shifts in the seasonal movements and wintering areas used by the Nelchina caribou herd. These descriptions and the discussions about what was happening were useful.
- In 2001, workshop participants discussed concerns about the declining numbers of the Chisana caribou herd. As a result of this discussion, the WRFN and Kluane First Nation wrote a letter to the YFWB requesting that immediate measures be implemented to prevent the Chisana caribou herd from extirpation. This led to an intensive interagency recovery effort in late winter 2003.
- The 2001 workshop produced a table of issues and follow-up actions required by workshop participants. In advance of a land claim agreement in the WRFN traditional territory, this type of plan was an early step in the development of a regional fish and wildlife management plan, like those done in other traditional territories in the Yukon.

Other Resources

Yukon Fish and Wildlife Management Board. 2002. *Two Eyes: One Vision Traditional Knowledge Conference held in Whitehorse April 1–3, 1998.* The presentation "White River/Northway traditional knowledge about moose" by Karen Clyde, Polly Hislop and Bob Hayes is summarized on pages 18–20.

Group discussion at workshop to develop population estimate: Muskox quota workshop, 2001.

Background

- Muskox used to live on the Yukon North Slope but died out between 1858 and 1865. They were introduced in 1969 in NE Alaska, and people began to see them on the Yukon North Slope after the 1970s. In the 1990s muskox sightings were more widespread, down to the Porcupine and BonnetPlume Rivers, and over to the North Richardson Mountains.
- Aklavik Inuvialuit generally want low numbers of muskox. There is a common understanding that caribou avoid muskox and places where muskox live, that fewer muskox is better for the caribou, and that there are more muskox than are counted in the airplane surveys.
- On the Yukon side of the Inuvialuit Settlement Region (ISR), muskox cannot be hunted due to wording in the Final Agreement and the Yukon Wildlife Act. (They can be hunted in the Northwest Territories portion of the ISR and in the Vuntut Gwitchin traditional territory.)
- Inuvialuit can hunt muskox in the Yukon when a Yukon-wide management plan is completed. Workshops and meetings to create this plan began in the 1990s.
- Getting an accurate count of muskox is difficult. Although they are regularly counted in some valleys in a core area in the foothills and valleys south of Herschel Island, it is too costly to count the small, dispersed groups and individuals.
- A 3-day workshop was held in Aklavik in October 2001. This workshop brought together community co-management boards and government representatives to exchange scientific and traditional knowledge about muskox behaviour, biology, distribution, and population size. The workshop also provided an opportunity to review and expand the scope of the Yukon North Slope Muskox Management Plan to meet the needs of all interested parties within the Canadian range of the population and to make recommendations for a harvest quota and regional allocation.
- At this workshop, biologists and hunters discussed the location and size of groups of muskoxen seen in recent years and came up with a preliminary population estimate. This summary looks at how this was done.

Methods

- Lindsay Staples, Chair of the Wildlife Management Advisory Committee (North Slope) (WMAC(NS)) facilitated the workshop, including the population size estimation session.

- There were about 35 participants at the workshop plus additional people from Aklavik.
- Dorothy Cooley (Yukon Fish and Wildlife Branch Northern Regional Biologist) began by indicating the number seen in the counts and the probable number in her study area south of Herschel Island (where most muskox, including radio collared individuals, were located). Ian McDonald (Ivvavik National Park Conservation Biologist) confirmed these numbers based on patrols and surveys in Ivvavik Park. Others began to list the adults seen in groups in particular areas. This continued over the range of the herd. These numbers and areas were not put on a map in front of the group, it was verbal, and the tally was kept on a flipchart.
- Dorothy kept a list of the locations and numbers of these subgroups and tallied 332 muskox (not including calves). This number was used as the 2002 muskox population. Some people wanted to call this a traditional knowledge population estimate.

Notes on collecting the information and ideas

- People had concerns that some of the groups could include individuals also seen in groups in other areas, and that some small groups could be missed. There was no way to adjust the estimate to address these concerns.
- Participants agreed that John Nagy (GNWT Supervisor of Wildlife Management, Inuvik) would distribute a map so that all the community agencies could label their observations with the date seen and number of calves. Dorothy would then compile the community information onto 1 map, distribute it to all participating agencies, and coordinate a teleconference to review the information. All but one of the groups provided observations. This omission prevented a rollup.

Notes on using the information and ideas

- People at the workshop chose to discuss possible quotas, based on these numbers, recognizing that the cost of counting these animals over the entire range is so high it would never happen.
- For the purposes of developing area-specific harvest quotas, the population estimate was divided among the different land claim settlement areas. On the Yukon side of the ISR there were 190 muskox and 87 on the NWT side, NWT Gwich'in lands had 35 muskox, and Yukon Gwitchin lands had 30.
- The workshop minutes were circulated to participants and posted on the WMAC(NS) website.
- The low numbers in the 2003 count were disputed by several biologists and communities. They felt the muskox had moved or were missed and the survey was not done in a statistically valid manner. This uncertainty contributed to confusion over the population estimate and quota.

Other outcomes

- The process continues. There are regular counts of muskox in the core study area and biologists and communities track the sightings of other groups as they are reported.
- In the 2003 spring counts in Ivvavik Park only 85 in were counted in the survey area plus 10 outside the survey area on the North Slope. Forty-three (mixed sex group including young of the year) were counted in the Richardsons. None were reported in the Old Crow area. This is down from the 160 seen normally in the study area. Counts in adjacent Alaska were also far lower, suggesting a region-wide decline.

Other resources

Draft management plans, a summary of this workshop, and background information on muskox in the region are available at http://taiga.net/wmac/species/muskox .

GROUP PROBLEM SOLVING

Interviews with elders about 25-year impacts of hydro development on fish: Aishihik Lake winter drawdown affects whitefish, 1991.

Background

- Aishihik Lake is an important source of fish for Southern Tutchone people.
- In 1975 the Northern Canadian Power Commission (now Yukon Energy) built a dam at the south end of Aishihik Lake, making it a hydro reservoir. There were no studies done to look at the impacts of changing water levels on whitefish before the reservoir was flooded.
- In 1991 Yukon Energy's water licence for the dam needed to be reviewed. The Yukon Water Board makes recommendations about proposed water uses to the Minister of Indian Affairs and Northern Development, who issues water licences.
- The utility, government, and interested groups began to talk about how to review this licence. A technical advisory group helped the Water Board and government decide what to study.
- The Yukon Fish and Wildlife Branch (YFWB) set nets to study the fish stocks. Scientists looked at fish scales to measure ages. Their study showed that some cohorts (fish born in certain years) were missing. The missing cohorts matched the years when the lake level was lowered to produce winter electricity. The utility hired 3 other experts to look at the studies, and they all confirmed the research.
- In another study, elders were interviewed about changing water levels and historical uses of Aishihik Lake by Southern Tutchone families.

Methods

- YFWB hired James Allen (Champagne and Aishihik First Nations (CAFN) member and contract interviewer) to interview 12 Southern Tutchone elders who knew the lake. CAFN supported the study.
- James and Nick deGraff (YFWB Fisheries Biologist) developed the questions. James asked the elders about fish caught (when/where/kinds/how many), and fishing methods. James also asked questions about things like lake levels, erosion, spawning areas, the dam, access to the lake, and historical and current ways families use the lake.
- Elders mapped whitefish spawning areas and told of times when the water level was lower, exposing these areas. The elders also described changes in the lake's shoreline, fish and plants.
- James wrote an 18-page report on the results of his interviews. The report describes historical use, original place names, current use and effects of the

dam for each area of the lake. The report did not directly quote the elders. Maps show important fish use and netting areas.

Notes on collecting the information and ideas

- James speaks Southern Tutchone, he knows the elders and the lake, and he has training in resource management. He is a skilled interviewer and writer.
- James taped the interviews and rewrote them in English. He paid elders $50 for their time and information.

Notes on using the information and ideas

- Elders identified impacts of low water that were not identified in pre-1975 assessments. These impacts were also shown through scientific studies. Traditional knowledge from elders matched the results of studies by scientists.
- James used strong language to describe the negative effects of low water levels on the lake and its ecosystem. He wrote that the lake "will die" if nothing is done to control the changes in water levels.
- Because of studies of impacts on whitefish, the dam's new licence includes limits on how low the water levels can be.

Other outcomes

- The community did not like to see more money spent and more fish killed in netting studies that showed an outcome they already knew.
- The elders' study showed the importance of using interviews as a way to share First Nations' concerns about changes caused by a dam built 20 years before.
- James' report gained lots of interest as a case study of traditional knowledge.

Other resources

James Allen. 1992. *Champagne and Aishihik Oral Survey and Report of Traditional Food Fishing in the* Aishihik *area.* Report prepared for the Yukon Fish and Wildlife Branch and the Champagne and Aishihik First Nations.

James Allen. 1993. *Champagne and Aishihik First Nations concerns on Proposed Studies.* Report prepared for Champagne and Aishihik First Nations, Haines Junction.

Nick deGraff. 1992. Aishihik *lake Study Preliminary Results from the 1991 Field Season.* File report, Yukon Fish and Wildlife Branch, Whitehorse.

R. Kussat. 1973. *Report on the 1972 Aishihik Lake Yukon Territory Limnological Survey.* Manuscript Report 1973-1. Northern Operations Branch, Pacific Region, Environment Canada Fisheries and Oceans Service.

W. J. Schonwenburg. 1974. *The Aishihik Hydroelectric Development Implications for Fisheries Resource Maintenance.* PAC/T-74-19. Northern Operations Branch, Pacific Region, Environment Canada Fisheries and Oceans Service.

Panel of elders decide appropriate ways to handle dead animals: Handling wolf carcasses in the Kluane/Aishihik areas, 1993

Background

- From 1982 to 1987, biologists in helicopters killed wolves in the range of the Finlayson caribou herd. The purpose was to increase the survival of caribou calves and increase the size of the herd.
- The Ross River Dena Council told the Yukon Fish and Wildlife Branch (YFWB) to treat the wolves with respect. Biologists were directed to sling the carcasses in nets, and skin, dry, and sell the pelts. Scientists also studied the bodies of the dead wolves. Afterwards, they returned the carcasses to open areas to attract other wolves.
- From 1993 to 1997, biologists killed wolves in the Aishihik area in the same way. This program also tested to see if fewer wolves would help moose and caribou numbers increase. In the beginning, no one was clear how the Aishihik wolf carcasses should be handled.
- Protesters accused elders who supported the program of not following their cultural and spiritual teachings.

Methods

- In January 1993, Yukon Government officials had a meeting with Champagne Aishihik (CAFN) and Kluane First Nations (KFN) to announce the start of the program. Biologists made a presentation about the program to elders and members.
- After the presentation, elder Alex Van Bibber asked if the plan was similar to the video of the Finlayson program. This helped people understand better. A biologist said yes, it is similar, and explained some differences.
- Lawrence Joe (CAFN Director of Lands and Resources) asked 5 elders how they thought the wolf carcasses should be handled. Each had a different answer, but they all believed the bodies should be treated with respect and returned to the land. They agreed that the Finlayson methods were fine, but they did not want the carcasses left on lake ice.
- Several elders flew to the camp to see how the dead wolves were handled. On their visit, 3 elders from KFN watched workers skin and study the wolves, and after tea they set a net for everyone to enjoy some fish.
- Three elders from CAFN arrived at the same time as a surprise visit by CBC reporters and some protestors, including Bill Hipwell (head of Friends of the Wolf). Elder Marge Jackson tried to talk to Hipwell, but he and the media walked away.

- Later in the program, wolf pairs in calving areas had surgery to prevent them from having pups. Though asked about this experiment, elders chose not to support or reject it.

Notes on collecting the information and ideas

- At the meeting with government officials and members of their community, elders were put on the spot to share their beliefs. The First Nation suggested this approach.
- Some elders wanted bounties to encourage trappers to take more wolves. The Wolf Conservation and Management Plan did not allow this approach.

Notes on using the information and ideas

- Elders wanted the locations of wolf carcasses to be kept secret. This way protestors could not create more problems.

Other outcomes

- Community members skinned the wolves. YFWB flew the carcasses back to open areas, off lake ice.
- Money from selling the pelts went to trapper education programs.

Other resources

C. E. Spence, 1998. Fertility control and the ecological consequences of managing northern wolf populations. MSc thesis, University of Toronto.

Jean Carey, 2003. Aishihik Caribou and Moose Recovery Program 1992–1997. MR-03-02. Yukon Fish and Wildlife Branch. Whitehorse.

Robert D. Hayes, Richard Farnell, Richard M. P. Ward, Jean Carey, Michael Dehn, Gerald W. Kuzyk, Alan M. Baer, Craig L. Gardner, and Mark O'Donoghue. 2003. *Experimental reduction of wolves in the Yukon: ungulate responses and management implications.* Wildlife Monographs 152.

Setting aside a seed area as a source for animals to rebuild adjacent populations: Hunting in the lower Nisling high-density moose area next door to the Aishihik recovery area, 1993.

Background

- First nation families know of special areas where certain animals that live in the region come from, that have been left alone by these families. These areas are often remote, secret, culturally significant, and only hunted when people are desperate. *Seed areas* are important to protect because animals move from them to rebuild numbers elsewhere.
- Scientists know about *population refugia*. In the Yukon the best known of these are areas where lynx and hares remain relatively abundant even at the bottom of the hare cycle. Lynx, in particular, rebuild from these areas as hare numbers increase. Biologists know that, within limits, moose in most regions move enough over the year to balance out local areas where hunters take many moose.
- There were many informal and formal meetings associated with the design of the Aishihik caribou and moose recovery program that involved First Nation people over the 1990–1992 period. However, the need to protect and not hunt a remote, abundant moose population adjacent to the recovery area was only heard after all the design decisions had been made.
- The Yukon Wolf Conservation and Management Plan allows wolf control under certain conditions. Control programs are intended to help low moose and caribou populations to grow in number.
- The plan does not allow hunting in recovery program areas.
- Yukon Fish and Wildlife Branch (YFWB) policy allows moose harvests up to certain rates depending on moose density in an area. It does not speak to setting aside good areas for moose and not bothering them in those areas.
- In February 1993, the YFWB set out a 20,000 square kilometer moose and caribou recovery area in the Aishihik and Kluane area.
- Local people (First Nation members and trappers) knew there were still a lot of moose in the Nisling area (1500 km^2). The outfitter began to offer hunts there in the mid-1980s. YFWB moose surveys in the Onion creek area in the late 1980s measured late fall moose numbers.
- YFWB did not know how moose populations moved between these areas.

Methods

- In 1992, the YFWB proposed the Aishihik and Kluane Caribou Recovery Program.
- In September 1992, YFWB held a workshop to collect academic and First Nation views on how to design the wolf removal and population monitoring program. The goal was to learn as much as possible about how populations of wolves, sheep, moose, and caribou would respond during years when there were fewer wolves and wolf packs. Two First Nation biologists in their 30's (Ray Quock, Linaya Workman) and 3 academics (Stan Boutin, Francois Messier, Tony Sinclair) joined 2 Parks Canada scientists, 1 conservation officer, and 7 YFWB biologists.
- The elaborate study design developed after this workshop did not pay particular attention to the high moose populations in the lower Nisling area, just outside the control area.
- YFWB did not restrict outfitter moose hunting in the lower Nisling area. This was one of the only areas left for the outfitter to hunt moose.
- The recovery program began in February 1993.
- The Aishihik and Kluane Caribou Recover Steering Group formed in February 1993 to provide community input into the program. This group recommended traditional knowledge interviews (see the profile in this series- *Interviews with elders look at animal population abundance over 70 years: Two First Nations look at historical abundance of Kluane and Aishihik caribou herds, 1993)*
- Mary Jane Johnson (Kluane First Nation (KFN) member and Burwash representative on the Steering Group) argued that the healthy lower Nisling valley moose population should not be hunted. She felt that moose from this area would help increase moose numbers in the recovery area. She explained the traditional concept of a seed area.
- YFWB said its hands were tied. It was following both the recovery plan guidelines that shut down hunting in the recovery area (wolf control area) and the policy that allowed hunting where numbers were healthy.
- The study design did not include funding for moose collaring and monitoring. That kind of work could have shown how moose moved in and around the recovery area.

Notes on collecting the information and ideas

- Mary Jane spoke of KFN elders' concerns about hunting in the Nisling area when the group discussed the need for hunting closures and the boundary of the study area. She explained the importance of a seed area to the recovery and argued that policies should require that seed areas not be

hunted. The community was concerned about the amount of game coming out of the area, and the outfitter's new camps and airstrips there.

- The discussion considered the importance of learning about how moose moved and lived in the area, the need to provide the outfitter with some opportunity to hunt moose (a large portion of the concession was closed to hunting), and the value of including the lower Nisling in the recovery area. People were told that it was highly unlikely that the decision about the boundary and hunting could be changed.
- A subsequent meeting looked at moose movement distances and seasonal patterns of movements from radio collared cow moose in the Dezadeash and Cloudy Ranges to the south of the recovery area to consider how moose might be moving in the recovery area. Members were told there was no money to radio collar moose in the recovery and Nisling area.

Notes on using the information and ideas

- First Nation views on the seed potential of neighbouring moose populations did not affect the study design. At first this was because they were not expressed or heard when the study was being planned. Later on there was no funding for moose collaring and monitoring to track how moose might move between the areas.
- In general, community people are keen to talk about how moose and people use an area. Biologists focus more on learning about numbers and ratios of bulls, calves, yearlings, and cows in defined areas that can be compared between years.

Other Resources

Fish and Wildlife Branch. 1992. *Designing an Experiment for Large mammal Recovery in the Aishihik Area, Yukon Territory.* Minutes of a Technical Meeting-Summary of Discussions, October 4, 1992, Yukon Fish and Wildlife Branch MR-92-2, Whitehorse.

Fish and Wildlife Branch. 1992. *An experimental design to test wolf regulation of ungulates in the Aishihik area, southwest Yukon.* Yukon Fish and Wildlife Branch TR-92-2, Whitehorse. 54 pp.

Yukon Wolf Management Planning Team. 1992. *The Yukon Wolf Conservation and Management Plan.* (Available from the Yukon Fish and Wildlife Branch, Box 2703, Whitehorse, Yukon. Y1A 2C6)

Information flows in community and issue-based planning: Planning for Integrated Wildlife Management in the Mayo District, 1993, 1998 and 2002.

Background

- The Yukon Fish and Wildlife Branch (YFWB) used to manage wildlife through territory-wide plans that focused on single species at a time. The most attention was paid to game and fur populations and their predators.
- Government had a hard time responding to regional concerns and requests for action in specific areas. It was hard to schedule and fund these activities.
- In the late 1980s and early 1990s, governments negotiated land claim settlement agreements. This prompted a shift to wildlife management by regions.
- In the traditional territory of the First Nation of Na-cho Nyak Dun (NND) the Minister of Renewable Resources set up ("pre-implemented") the Mayo District Renewable Resources Council (MDRRC) before NND concluded their land claims agreement. It modeled the new structure set out in the Yukon Land Claim Umbrella Final Agreement.
- In 1993, the MDRRC, the NND government, and the Minister of Renewable Resources agreed to develop a regional plan for wildlife in the NND traditional territory.
- The process adopted was one the Porcupine Caribou Herd Management Board used to develop its coordinated action plan.
- It used a workshop format to bring community people, First Nations, elders, stakeholders, and government managers together to discuss concerns. The group, working together, developed action plans by joint agreement or consensus.
- This planning approach was repeated in 1998 and 2002 in the Mayo area and in other regions as well. The process is modified to the situation and is now a little more formal at the outset, as partners agree what can be addressed in the plan. For example, some concerns need to be handled at the Yukon-wide level, rather than in regional plans.
- About 460 people live in the NND Traditional Territory, mostly in Mayo. About 25 of these people attended information and planning workshops in June 2002.

Methods

- The first steps involved agreeing to do a plan, deciding how to do it, and agreeing who would do what. Brian Pelchat (YFWB Chief of Regional

Management), Billy Germaine (with the NND negotiating team) and Doug Urquhart (a contract facilitator) all had experience with the Porcupine Caribou Management Board planning process. In 1993, they discussed the approach with the MDRRC Chair Dan McDiarmid and MDRRC members and they all decided to try a 3-day outdoor workshop that looked at big game species. NND hosted the session and everyone camped out.

- In 1998 the MDRRC drove the process and hosted a 2-day planning session in the community. The event was supported by an informal agreement between the partners. Doug Urquhart was hired to partner with the MDRRC Executive Director to facilitate the meetings.
- In 2002, Karen Clyde (YFWB Fish and Wildlife Planner) and Steve Buyck (NND Resource Officer) developed a 6-page Memorandum of Understanding about the planning. This met everyone's needs for certainty about who would do what, who would pay for what, what issues would and would not be considered, and when everything would happen. A lot of the organizational details for the 2002 plan were worked out in the meeting after the last review of the 1998 plan in February 2002.
- The next step figured out which issues the plan should look at. In 1993, the MDRRC hired a local person to interview people in their homes to develop a list of concerns. The interviewer may have skewed the results by asking questions in a leading manner and no report was released. Wolves and outfitters were big issues. In 1998, the MDRRC reviewed the 1993 survey and established that the results were still consistent with local concerns. Some minor adjustments were made to update it for accuracy.
- In 2001 the MDRRC distributed 183 questionnaires in the Mayo area. This questionnaire had 3-5 mostly open-ended questions in 10 topic areas. The MDRRC released a report summarizing the responses in the 104 returned questionnaires. Most respondents were concerned about haitat management and protection.
- Next, background information on these concerns and species was gathered and summarized. Ideally, background information comes from 3 sources: government wildlife studies, interviews with elders done by the First Nation, and comments made by knowledgeable people at the workshops. In 1993, Dorothy Cooley (then the Regional Biologist for this region) prepared a binder with all the information from airplane surveys and harvest records — all the 'technical' information. A plain language contractor helped to make this more readable, but most of the time people with questions just asked Dorothy. This was an important step for Dorothy to learn all about what had been done and to clarify her thinking on information gaps and issues. Copies of the binders went to the MDRRC and governments. Information from the community came in verbal form during the planning session as participants spoke up.

- In 1998, government representatives and the MDRRC reviewed the 1993 information. They felt that a full-scale community survey would not much new or more relevant information. In addition, 2 workshops were held so that community members could discuss known concerns or to bring forward new ones. This resulted in some adjustments to the 1998 plan. Wolf and forestry issues were dropped from the plan but a number of smaller items, such as butterflies, were added. Trapping issues were important in this plan.
- In 2002, Mark O'Donoghue (YFWB Northern Tutchone Regional Biologist) prepared attractive plain language summaries of what he had been able to find out about each species from the various technical studies and conversations with people in the region over the previous 4 years. These summaries also noted his concerns and information needs. He outlined these at a 2-day information workshop; additional thoughts were offered by Steve Buyck and by elders and others present at the meeting.
- In the 3 planning iterations information from elders was never formally presented in the form of prior information or a synthesis. Elders were called on to provide perspectives during discussions.
- The actual planning step comes up with solutions then tasks for one issue after another. Independent facilitators Doug Urquhart (1993), John Reid (1998), and Bob Hayes (2002) led 2-day workshops that involved stakeholders and residents in the area, MDRRC members, elders, and First Nation and Yukon government staff.
- The physical structure of the planning workshop has changed little since 1993. A schedule of actions to address identified concerns was built on 3 large display boards (each 130 by 260 cm (4' by 8' sheets of stiff white plastic called coroplast available from building supply centers)). On 1 board, for example, were *Harvest Concerns*, with vertical columns for *Moose, Caribou, Grizzly bears,* etc. Horizontal rows began at the top with *Concern, Solution*, and the planned *Year* for the actions. Florescent poster board strips 50 by 15 cm with the information were taped to the display board in the right spot as the planning progressed. It was easy to see how much work was scheduled for each year to decide if the total workload was reasonable. In 2002, the process was changed so that the discussion was centred on each species and its population, harvest, or habitat issues rather than looking at population issues for each species before moving on to the next topic.
- Each action identified the planning partner (YFWB, NND, or MDRRC) who was going to do the work. In 1993, the workload was very ambitious because people wanted to address long-standing issues. In many cases they overestimated what could be accomplished. In 1998 and 2002, the list of tasks was still ambitious but challenged everyone to work hard. In 2002, the responsibility for tracking the progress in each action shifted from

MDRRC to the YFWB Fish and Wildlife Planner, and the plan took on a more polished, plain language form that more clearly explained to everyone what was expected in each task. The wording for these tasks shifted from *actions* to *commitments*.

- Actions that did not get completed were carried forward from one plan to the subsequent plan.

Notes on how the local information was collected

- In all 3 planning sessions, NND raised concerns about the cardboard boxes of unorganized interview information they had that needed to be organized. These interviews with 'old elders' from the land claim negotiation days contained much wildlife information.
- Much information is often required before addressing concerns. This usually requires actions involving interviews ("ask people about moose calving areas"), that may be followed by, or complemented by, airplane surveys or studies. In this way, the plans guide future interview work.

Notes on using the information and ideas

- Planning partners are still working to ensure appropriate and respectful sharing of information to better guide wildlife management decisions. There is much information sharing and trust between government staff in the region, but people are not willing to see map and other information from interviews in the community go to Whitehorse offices or to widely-shared computer databases.

Other outcomes

- The workshop approach and the plans spurred decisions that shifted the way that the YFWB is structured. Five regional biologists were hired and stationed in the communities between 1991 and 1998.
- The Yukon government chose to support regional planning as the way to integrate wildlife management approaches and coordinate program delivery with new First Nation governments and Renewable Resources Councils.
- The planning process began to build working relationships among the plan partners and planted the seeds of trust, cooperation, and flexibility that are needed to make a co-management system work.
- YFWB use the completed plans to prepare budgets and schedule regulation changes that would carry out plan actions. It is now hard to find money for anything that is not listed as an action in a plan. Biologists now suggest actions they would like to see done, some of which are added to the plan.
- The planning process demonstrated the need for further trust building and the importance of people who are prepared to work to build trust. It also speaks to the importance of trust in the co-management process. As the

systems of land and resource management become more complex, they are built and succeed on the willingness of partners to be flexible and accept the values and positions of others. As an example, there are many concerns about the Yukon Government's inflexibility in accepting some novel solutions developed (negotiated?) within the community that do not correspond with the government's way of doing things (for example, catch and release fishing, local preference, registration hunts).

- It also illustrated the need for flexibility in administrative systems. Administrative systems must accommodate changes in processes and decision-making methods.
- Interest groups based outside the region now recognize the importance of these processes to advance their agendas. Community members may not speak out at sessions when too many 'outsiders' are present. The co-management agenda has developed because community members felt they had no ownership of, and were alienated from, fish and wildlife management. They are quite sensitive to the lobbying role of articulate outsiders who were more influential in fish and wildlife management prior to the settlement of land claims.
- Participation by community members may decline as successive iterations of the plan address fewer controversial items. The workshop style of the third plan did not seem to engage the community.
- Regional biologists are hired through processes that involve Renewable Resources Council members and First Nation representatives from the region. This gives them a role in the selection, and emphasizes communication and interpersonal skills that are important to build and maintain trusting relationships.
- Information from community members is variously interpreted as *local* or *traditional* knowledge. Elders usually receive honoraria to attend workshops, and facilitators actively invite their comments.

Other resources

The 1993, 1998 and 2002 versions of the Integrated Wildlife Management Plan: Na-cho Nyak Dun Traditional Territory are available from the MDRRC, and Yukon Fish and Wildlife Branch in Mayo and Whitehorse. The current versions of all these plans are available on the website www.yfwmb.yk.ca/comanagement.

Pelchat, B. and D. Urquhart. 1998. Community-Based Management in the Yukon. Participation Quarterly.

The First Nation of Na-cho Nyak Dun holds the original oral history interviews and the maps are in the basement of its office. They are kept confidential.

Kelly Hayes. 2000. *Walking Together: An Evaluation of Renewable Resource Co-management in the Yukon Territory*, thesis approved by the Faculty of Environmental Design, University of Calgary.

Two computer-based "slideshows" are available in Microsoft PowerPoint. One supported a presentation given by Brian Pelchat (YFWB Chief of Habitat and Regional Management) to government staff in Saskatchewan. Another supported a presentation by Karen Clyde (YFWB Fish and Wildlife Planner) to the Organization of Wildlife Planners in April 2002.

Mayo District Renewable Resources Council. 2001. *Community Wildlife Questionnaire, Mayo District Renewable Resources Council, June 2001.*

Information on numbers, trends, and harvest from community, outfitter and government surveys form a basis for allocations: Quotas on outfitter moose and caribou harvests -1994 and ongoing

Background

- Twenty big-game outfitters hold monopoly rights to guide non-resident hunters in concessions that range in size from 3,000 to 36,000 square kilometers.
- Ceilings on outfitter harvests of grizzly bears were established in 1979. The idea that there were no limits on the numbers of moose, sheep, caribou, black bears, wolves, or wolverine that an outfitter could harvest was an increasingly frequent concern to many people in the 1980s. Many people wanted to see limits for more species.
- In the early 1990s, the Yukon Government's Fish and Wildlife Branch (YFWB) decided to set limits on the harvests of moose and caribou by outfitters.
- The grizzly bear quota system served as a rough model.
- In 1993, the YFWB held a 3-day workshop to rough out a harvest quota system.
- Between 1993 and 1995 an 8-member Outfitter Quota Committee travelled to Yukon communities, and discussed the workshop recommendations with local people. This committee included 2 YFWB staff, 2 Yukon Fish and Wildlife Management Board (YFWMB) members, 2 Yukon Outfitter Association members, and 2 Mayo Renewable Resources Council (RRC) members.
- Government adopted guidelines for the system in 1996.
- By 2003, 17 of 20 outfitters have had quotas put on the number of moose and caribou they can take.
- Quotas are set by a 3-party process that includes YFWB, the outfitter, and the appropriate RRC.

Methods

- Every 3 to 5 years, Harvey Jessup (YFWB Harvest Management Biologist) and the regional biologist meet with each outfitter and the RRC. At this meeting they look at population and harvest information.
- The RRC then sets up a meeting to talk about a quota arrangement.

- They hold the meeting in the community and YFWB staff and the outfitter attend. In some communities the RRC invites the First Nation government resource management personnel to attend and participate.
- The RRC brings information on moose and caribou numbers, status, and in some cases, movements.
- The RRC or the First Nation brings estimates of harvest by first nations people in the concession.
- Finally, the RRC says what the community would like to see in outfitter operations, meat handling, and local employment.
- The YFWB brings moose and caribou number estimates, summaries of survey information, and information on licensed harvests.
- The outfitter brings a written harvest management plan that lays out operational information, observations and thoughts on wildlife numbers, trends, distribution, and key areas, and "What is required as a quota to keep the business viable."
- Meetings usually last from 1 to 5 hours.

Notes on collecting the information and ideas

- Biologists usually have to base their estimates of the numbers of animals on older survey data or on numbers from studies in similar neighbouring areas.
- The group usually gives more weight to local information on herd sizes and where animals are during different seasons. That is because outfitters know their areas and RRC members are often former guides, trappers or people who also have good knowledge of the area.
- Outfitters occasionally bring number estimates that appear to be inflated to support their business plan harvest numbers.

Notes on using the information and ideas

- The YFWB, outfitter and RRC work together to estimate moose and caribou numbers in the outfitting area.
- All 3 parties have to agree on the estimates they will use.
- Wildlife managers use standard "sustainable" harvest rates of 2 to 3 percent of the population for caribou to set the allowable harvest. (A sustainable harvest rate means the **proportion** of animals that can be removed by all hunters without affecting the health of game populations in that area. The allowable harvest is the **number** of animals that can be removed by hunters without affecting the health of game populations in that area.)
- Managers use a harvest rate of 2 to 5 percent of the population for moose.

- The 3 parties then make their best estimate of how many animals will be taken by both non-native and native residents.
- The quota guidelines call for outfitters to get between 25 and 50 percent of the non-native harvest in areas where there is a conservation concern. Because they usually operate in remote areas far from resident and first nation hunters, this allocation proportion is rarely a problem.
- Where the quotas fit within the range set out in the guidelines often depends on how the community feels about the outfitter's business and hunting plans. If a community is happy with an outfitter, the quota is likely to be higher.
- In general, most of the harvest in remote areas goes to outfitters. The quota system discourages them from hunting in areas closer to communities where there is greater native and non-native hunting pressure.

Other outcomes

- When wildlife populations are falling or when demand from various groups of hunters is going up, decisions about who gets to harvest how many animals get tough.
- Outfitters like the security that a 3 or 5 year quota term offers their businesses.
- Outfitters would prefer to work directly with governments.
- The quota process and community involvement challenges businesses to respond to community needs.
- Outfitters can appeal decisions. This appeal process has often been critical of imprecise harvest estimates provided by First Nation governments.

Other resources

Yukon Fish and Wildlife Branch. 1995. *Guidelines to establish outfitter quotas.* Yukon Department of Renewable Resources, Whitehorse.

Workshop and meetings try to resolve differences between elders and biologists regarding causes and responses to population decline: Kluane First Nation and Dall sheep in the Ruby Range, 1996.

Background

- Sheep numbers change over time. There is wide agreement that numbers are lower than they were in the 1970s. Elders know that sheep numbers were much higher before this.
- Ground and air counts of sheep are available for the area since 1969. Lots of research has been done around nearby Sheep Mountain in Kluane National Park.
- Biologists believe that years of bad weather during lambing season are causing the low numbers. Many Kluane First Nation (KFN) community members think it's because outfitters and others hunt too many rams. They worry that there are too few sheep 'elders' to teach the young rams how to behave, and where to feed and hide.
- Many community members used to work for big game outfitters or run their own businesses. But now no one works for outfitters, and unemployment is high. There have been tensions between the community and the outfitter in the past 20 years.
- Kluane First Nation (KFN) Chief Joe Johnson demanded something be done. He made a presentation to the Yukon Fish and Wildlife Management Board (YFWMB). The Board requested a review and the community then suggested a workshop. Yukon Fish and Wildlife Branch (YFWB) paid for and helped organize the workshop in Burwash Landing.

Methods

- The goal of the workshop was to look at the problems from many different viewpoints, and to put all the concerns on the table.
- Mary Jane Johnson (KFN staff member) organized the workshop. Many organizations, government staff and community members attended.
- People spent the morning sharing information about sheep numbers over the years. Elders, hunters and residents described what they saw, and biologists provided survey results. This was taped and transcribed.
- Mary Jane and Barney Smith (YFWB Public Involvement Biologist) marked the information that people said that could be put on maps on 8 maps of the area. Each large map showed information from a decade, for a total of 8 decades, 1920–1990. They also wrote down who was the information source

and what they saw. There was some concern about why all the numbers were written down and why there was so much attention given to numbers.

- The mapping process showed large changes in sheep numbers between decades. Sheep disappeared from some ranges.
- People had concerns about how biologists applied counts from one area to other areas, and how they changed some counts when they believed that sheep had moved into or out of the survey area.
- The community felt that high ram harvests and other factors caused lower numbers. Jean Carey (YFWB sheep biologist) felt that hunting was not the problem. Summer counts showed that few lambs survived both inside the park and in the hunting area in many years in the late 1980s and early 1990s due to cold wet weather, and the drop in overall numbers was a consequence of this. Jean's counts matched the community's observations of declines from 1969 to 1997.
- The community was not sure how to make sense of Jean's information. People understood the effect of unusual weather, but understood that sheep had lived through much bad weather over thousands of years, and that lamb deaths due to late springs was not the only cause to the decline. The graphs and talk about similar patterns in survival and trends in number in the unhunted park population and the adjacent hunted Ruby Range did not prove that no action was necessary with respect to hunting. People felt that:
    - Applying sheep counts from one area to another should not be done or was not being done properly,
    - There was no sustainable sheep harvest when a population was declining or low,
    - A guardian should patrol the areas to make sure people were hunting ethically,
    - It was wrong to assume that taking the best males would have no long term effect, and,
    - Sheep moved in and out of the area where they were counted.
- They were most concerned about doing everything that would help the sheep recover.
- In the afternoon, smaller groups talked about how wildlife management could change in the area.
- At the workshop, the Ruby Range Steering Committee (RRSC) was formed to work on the issues and develop recommendations.
- The RRSC met 8 times after the workshop. The Chief, the outfitter (Debbie Carreau, Faro, Yukon) and the facilitator gave the recommendations to the YFWMB verbally and in writing.
- The community felt the meeting went quite well, but the overall committee and later implementation process did not keep the community involved.

Notes on collecting the information and ideas

- Mary Jane wrote down all the elders' comments, and she wrote a report of the afternoon group discussions. Barney wrote a report with observations for each decade.
- Elders' quotes were included in the report on the workshop and in the Steering Group recommendations.
- Staff from KFN and YFWB guided and supported the steering committee. This was not the best approach. The KFN person withdrew.
- Though the workshop was about sheep, the process seemed to also be about the problems the community has with how government manages the land. People didn't like the way sheep were managed for the benefit of American hunters and outfitters who live elsewhere. They wanted their concerns about losing too many old rams taken seriously. They wanted more control over how wildlife is managed and more opportunities.
- For some, the workshop seemed more like a way to resolve conflict, not as a process to plan wildlife management.

Notes on using the information

- The workshop helped find out about community concerns. Much of what they wanted to change needed to be done by government through changes in policies and legislation.
- Some changes included:
    - further limits on ram hunting, to maintain enough rams for breeding and for older rams to guide younger ones,
    - money to hire Yukon First Nations game guardians,
    - quotas on sheep hunting for outfitters,
    - habitat protection for sheep,
    - no more low-level flying over sheep, and
    - limits on off-road vehicles
- Some outcomes of the recommendations:
    - In the first year, the outfitter took 12 rams as agreed. But he took 18 rams in the second year, though he said he would take 12.
    - Hiring a game guardian did not happen until 4 years later (2000).
    - YFWB did ground and air surveys with community members.
    - Studies were completed by Alex Frid (contract biologist) on sheep responses to airplanes and helicopters.
- Changes that were voluntary were weak. They made the process seem like a waste of time. The community felt an absence of trust. They felt they weren't taken seriously.

- The steering committee developed recommendations, but many did not happen. An action plan may have been a better idea. As the recommendations became specific enough to be implemented, or practical from the government's view, they seemed to change the meaning the committee felt was important.
- Government staff found it was difficult to find money and time to implement the recommendations. Although the YFWMB endorsed the recommendations, the RRSC lacked a legal mandate, so the recommendations did not have as much influence as they might have had coming from a Renewable Resources Council in terms of how the YFWB made decisions about funding priorities.

Other outcomes

- At the time, anthropologist Paul Nadasdy was working with KFN doing traditional knowledge research for his Ph.D. The RRSC asked him to record the meeting minutes. He wrote about the process in his thesis and published an article in a research journal. He noted in 2002 that people in the community looked at the process as a waste of time, and in recent years many people believed that climate change was a more important factor in the decline than they had thought in 1995.
- Many in the community are frustrated with the science-dominated system of managing fish and wildlife where traditional knowledge is fitted into the slots in scientific thinking, where the declines show that the scientific way of looking after the land is not working, and there is reluctance in government to rethinking the philosophy, vision, organization and methods of how to look after the land.

Other resources

Kluane First Nation and Government of Yukon Fish and Wildlife Branch. 1995. *Ruby and Nisling Range Wildlife Meeting, November 8, 1995.* Report prepared for Ruby Range Sheep Steering Committee (includes transcript of meeting, summary notes from working groups, and Dall sheep observations by decade).

Ruby Range Sheep Steering Committee. 1996. *Recommendations for the Recovery of Sheep in the Ruby Range, Southwest Yukon.* Presented to the Yukon Fish and Wildlife Management Board and the Yukon Department of Renewable Resources.

Paul Nadasdy. 1999. *The Politics of TEK:* Power *and the 'integration' of knowledge.* Arctic Anthropology. 36(1–2):1–18.

Paul Nadasdy. 2000. *Hunters and bureaucrats: power, knowledge and restructuring of aboriginal – state relations in the* southwest *Yukon, Canada.* Ph.D. thesis, Johns Hopkins University, April 2000. This dissertation is now available from UBC Press.

Paul Nadasdy. 2003. Reevaluating *the Co-Management Success Story*. Arctic 55(4):367-380.

A traditional concept becomes a Wildlife Act regulation: Letting the leaders pass as Porcupine Caribou migrate across the Dempster Highway, 1997–2002

Background

- Each fall, the Porcupine caribou herd migrates 600 km south from northern Yukon to winter range north of Dawson City.
- The Dempster Highway linked Dawson City and Inuvik in 1979. The highway split the herd's winter range, which created new challenges to managing wildlife and hunting in the region.
- Local users believe that if the caribou leading the fall migration meet hunters or traffic along the Dempster, they may change their direction and avoid the Dempster Highway area. They say that caribou used to winter more often on the east side of the Dempster Highway than they do now.
- Elders say that the caribou leading the migration know the best routes and good places to spend the winter. They think it's a bad idea to hunt the lead caribou but many hunters do not want to wait until leaders pass.
- In 1997, the Porcupine Caribou Management Board (PCMB) proposed not hunting caribou for 7 days after the first large groups reached the highway to allow the lead caribou to cross. There is no scientific information on this proposal, only local knowledge.
- There are other complicated issues related to Dempster caribou hunting. This closure was 1 of 4 recommendations sent by the PCMB to appropriate governments. Other recommendations were a 500-metre no caribou hunting corridor applicable to all hunters (public safety), an extension of the cow hunting season for licensed hunters, and an opening date to allow the use of snow machines.
- In 2002 the PCMB began a public review of all 4 regulations.

Methods

- During PCMB consultations on the Dempster and other hunting issues in 1993, a Gwich'in elder from Fort McPherson raised the traditional idea of letting leaders pass.
- All User Communities met at several PCMB-hosted workshops from 1995 to 1997 to develop the proposal. Other forms of communication were also used, ranging from community tours to mail box stuffers. The goal was to develop an idea that had wide support into a practical legislative proposal.
- The PCMB recommendation for the 1-week closure became law for all hunters in 1999. Since then, Dorothy Cooley (Yukon fish and Wildlife

Branch (YFWB) Northern Regional Biologist) has been trying to track how hunters view the regulation and whether the regulation has worked.

- Hunters filled out a 1- or 2-page questionnaire at the hunter check station at the south end of the Dempster Highway in 1996, 1997 (pre-regulation), and 1999 - 2002 (post-regulation). Hunters were asked about their hunt, wildlife sightings, and their satisfaction with hunting rules and practices including the hunting closure. A $400 gas coupon was offered as a prize in 2002. In 2001, a similar questionnaire was developed for the northern (NWT) end of the highway for hunters living in Mackenzie Delta communities.
- In the fall of 2001 the Tr'ondëk Hwëch'in First Nation interviewed some of their members about their perspectives on the regulations and management of Dempster caribou.
- Local users participating in focus group regarding caribou behavior near the highway offered some insights into which caribou are the leaders.

Notes on collecting the information and ideas

- After much public consultation, the PCMB sent the initial proposal to appropriate government leaders in late 1997. The Yukon Minster of Renewable Resources then asked the First nation governments for letters to commit themselves to the proposal and to changing their laws. The Government of the Northwest Territories got legal opinions on each proposal when implementing the PCMB recommendations.
- This closure was 1 of 4 recommendations sent by the PCMB to appropriate governments. People had many concerns, but it was difficult to look at them all in one process. It may have been better to deal with them one at a time.
- In 2002 the PCMB began a public review of all 4 regulations.

Notes on using the information

- The challenge was for many levels of government and communities to agree on how to manage hunting. Hunting has changed in the time since the highway was built. Just because an idea is traditional and attractive does not mean that it is easy to 'operationalize' and that people will comply. An important cultural value is letting the leaders pass, but another important cultural value is bringing home meat for your extended family.
- Transforming the concept into a practical regulation took much discussion. In 1999 - 2002 the closure started when the caribou first arrived in good numbers, at either the south or north end of the highway. In one year the caribou did not pass, but stopped for the week, suddenly moving out when hunting started again. In another year, the predicted arrival did not occur and during the closure week no caribou were near the highway. It will take time to sort this out.

- The definition of a 'leader' requires much more discussion. When participants in the focus groups defined leaders, they identified older cows, mature bulls and 2-year old bulls. The definition of selective hunting also creates confusion. For example, some Fort McPherson hunters say they already let the leaders pass. The leaders they speak of are mature cows and they say they don't shoot cows in the fall.
- For some hunters, the idea of letting leaders pass goes against their traditional belief that an animal presents itself to be killed.
- Settlement lands of 4 First Nations border the Dempster Highway. The Yukon and NWT governments manage the highway right of way. A territorial park has been established in a popular hunting area. All have to make their legislation and enforcement plans work together to enact the PCMB proposal. The process of coming to agreement is quite complex because it involves requirements in 5 distinct land claims agreements, 2 territorial governments, and the now-dated Porcupine Caribou Management Board Agreement.
- There are various concerns about this regulation. Some hunters say that cows lead the migration, and they only take bulls, so it's not a problem. Other hunters are worried that there may be a short time between the arrival of the caribou and the freeze-up of the Mackenzie River. A suggestion is to reduce the closure to 3 days from one week. The ice bridge might be late and hunters would not be able to cross the river to hunt the caribou until late in the season. Others see the closure as a violation of their aboriginal right to hunt.

Other resources

Yukon Fish and Wildlife Branch. 1997 and ongoing. *Results of the Annual Dempster Visitor and Caribou Hunter Questionnaires*. File Reports, Yukon Fish and Wildlife Branch, Dawson.

Gary Kofinas. 1998. *The costs of power sharing: community involvement in Canadian Porcupine caribou herd co-management*. Ph.D. thesis, University of British Columbia.

Elders describe wildlife and habitat culture laws and apply these to self government: Selkirk Doòli Traditional Process Project 2002–2003.

Background

- After the Selkirk First Nation (SFN) signed their land claim Final Agreement in 1997, elders wanted to see self government reflect traditional knowledge, practices, and systems of governing. These emphasized sharing, caring, respect and teaching.
- Doòli are the rules that must not be broken in order to show respect for all living things.
- Over 5 workshops, elders met and described traditional fish and wildlife management. They wanted to document and implement a system based on their traditional practices and seasonal activities that would work now.
- There are 7 parts in the *Northern Tutchone Traditional Management System* created in these workshops including
    - *Traditional Laws and Doòli*, a report from the workshops drafted by Roger Alfred,
    - an illustrated booklet,
    - a SFN game guardian who can explain the traditional laws and Doòli to people,
    - an identify card for SFN beneficiaries to use on other Yukon First Nation traditional territories,
    - harvest permits for first nations with no sharing accord,
    - harvest recording for all first nations hunters, and
    - an annual gathering about animals and hunting on Selkirk traditional territory.
- This summary discusses the workshop approach to develop the system.

Methods

- Roger Alfred (SFN Traditional Researcher) and Doug Urquhart (facilitator) organized the 5 workshops with help from a technical steering group comprising Fred Green (SFN Self Government Director), Darin Isaac (SFN Lands and Resources Director), Don Trudeau (SFN Lands and Resources Assistant Director) and Mark O'Donoghue (Yukon Fish and Wildlife Branch (YFWB) Northern Tutchone Regional Biologist). The first workshop was 29–31 May 2000, and the last was 27–28 February 2001.

- Elders discussed the values, seasons, and practices for traditional hunting and fishing, and what they had been taught was appropriate and not appropriate. Doug illustrated this with simple sketches on flipcharts. Elders corrected the sketches until they were satisfied they were accurate.
- Roger drafted a long report from the audio tapes and meetings focusing on the oral history of all activities that Selkirk people did with their traditional management of resources. He also wrote the Preamble on Oral History in the Selkirk Blue Law Book.
- Doug and Roger assembled the sketches into an 11-page booklet of sketches describing the Dooli and the new system. There was review meeting with many elders in Pelly, 9–10 April 2001 to go over the first draft of the picture book based on the flipchart sketches.
- Doug and Roger also created a Hucha Hudan Harvest Calendar. For each month there was a sketch of a traditional hunting and gathering activity, and, by week, a list of good species to harvest and another list of species that it was better to not hunt. For each month there was also an elder's quote and a box for people to write in the animals, birds, and fish they took.

Notes on collecting the information and ideas

- Participating elders were born between about 1920 to 1945. In most cases they were recalling what their grandparents and parents had told and shown them.
- Doug's facilitation style used a big rectangle made from tables with chairs for the elders around the perimeter. On one side of the rectangle, away from the food and entry, there were 4 display boards and flipcharts. The room in the Pelly Community Hall has lots of windows and good lighting, and there were also small floodlights over each of the 1.5 by 2.8-m display boards.
- Microphones were on each table to record what was said and an amplifier and speakers helped everyone to hear. Elders pulled the microphones closer when they spoke. Translators and researchers worked hard to ensure that they understood exactly what the elders said and meant.
- Elders received honoraria and travel money. They all looked forward to the gatherings, even if some said little. Fifteen to 25 elders participated at each session; numbers increased for the later workshops as the process became better known. Nineteen elders attended at least 3 of the workshops.
- Elders and the 3 Northern Tutchone First Nations viewed this as a significant process. They invited youth from the 3 First Nations to sit in the middle of the square and listen.
- Most of the discussion was in the Northern Tutchone language. Several translators played an active role in the meeting, helping Doug understand

what was being discussed. Doug learned and used many nouns over the course of the workshops.

- Invited observers included Fred Green (SFN Lands and Resources Director) and staff, Chief and Council members, Mark O'Donoghue, Selkirk Renewable Resources Council members, and all interested members of the community.
- Jimmy Johnny (First Nation of Na-cho Nyak Dun member and video photographer) videotaped some sessions. SFN videotaped some of the sessions as well. Peter Johnnie operated a public address system so that everyone could hear the discussion.
- One of the workshops was held in Mayo and one in Carmacks; all others were in Pelly Crossing. Key elders from Na-cho Nyak Dun and Little Salmon/Carmacks First Nations were invited and participated in all the workshops.

Notes on using the information

- Selkirk First Nation controls all the information on this project. Roger Alfred is the contact. For example, the calendar indicates that all material is the sole property of Selkirk First Nation and may not be reproduced without permission of the First Nation except for small samples for non-commercial purposes. All the illustrations are marked ©SFN.
- Reasons behind the laws were discussed at length at the workshops, but not all of them were included in the printed material.
- Selkirk First Nation still needs to implement the calendar.

Other outcomes

- SFN and Northern Tutchone people who do not follow Doòli face an escalating series of meetings and sanctions imposed by elders and clan leaders. Exactly how the Doòli translate into the justice system still needs to be worked out.
- Elders are determined to see the Doòli implemented, and want to complete training materials and get hunting regulations changed. The Doòli system is to be implemented for SFN members, then for non-SFN people using SFN settlement lands. Approaches to inform and build support for wider application of the Doòli throughout the traditional territory are being discussed as part of the community wildlife plan, and the annual May gatherings.

Other resources

Selkirk First Nation. 2001. *Doòli Law Book*. Passed into law by the Selkirk First Nation at their General Assembly in August 2001.

Alfred, Roger. 2002. Summary *of Doôli workshops*. Report prepared for elders, participants and Selkirk First Nation. Pelly Crossing.

Alfred, Roger and Doug Urquhart. 2002. *Northern Tutchone Selkirk First Nation Doôli / Traditional Laws*. Illustrated booklet prepared for Selkirk First Nation. Pelly Crossing.

Urquhart, Doug and Roger Alfred. 2002. *Hucha Hudan Calendar*. Prepared for the Selkirk First Nation Self Government and Lands Departments.

Elders and others gather annually to discuss land and wildlife status: Selkirk May gathering, 2000 and ongoing

Background.

- Many Yukon First Nation elders describe annual gatherings in the spring where people discussed the land and wildlife, and made hunting and gathering plans for the coming year. Families travelled a lot, and these gatherings were very important.
- Since 2000, Selkirk First Nation (SFN) have held annual May gatherings as part of their traditional fish and wildlife management system created as part of their self government.
- At these 3-day meetings, many wildlife issues and concerns are raised and discussed, and recommendations and plans are made for SFN and other governments. Elders have a prominent role at these meetings.
- Within SFN, Roger Alfred (traditional knowledge researcher), Fred Green (Director of Lands), and translators Rachel Tom-Tom and Lizzie Hall have played an important role in organizing these gatherings.

Methods

- The Pelly Community Hall is set up with tables in a square and display panels at the front. Elders sit around the perimeter of the tables and youth, when they attend, sit in the middle.
- The sessions discuss large mammals important to people in the area. At these gatherings, Mark O'Donoghue (Yukon Fish and Wildlife Branch (YFWB) Northern Tutchone Regional Biologist) presents population size estimates from recent surveys, with estimates of sustainable harvests. He then outlines harvests for mountain blocks or groups of game management units reported by outfitters and licensed (mostly non-native) hunters. A SFN lands department reports harvest by First Nation hunters. The facilitator repeats the main points in English, and then a translator repeats the main points in Northern Tutchone. People then comment on the distribution and trends, and recommendations are written on flipcharts.
- The pace is quite relaxed and the sessions are humorous and social. The meetings begin by 9, with a long tea break and a hot lunch. After breaks there are often games (men's needle threading, women's moose calling) to begin the next session on a light note. The room is bright.

Notes on the gathering

- These sessions inform elders and beneficiaries, and give them an opportunity to raise concerns either to the whole group or to the organizers.

- The elders leave with an idea of the commitments that the Yukon and First Nation governments are making to address concerns.
- People leave the meeting with an idea of how the animals are doing over the whole traditional territory.
- Not all the perceptions about the condition of the land and animals are based on technical studies. People identify places where water is polluted and animals have toxins and should not be eaten.
- The sessions are recorded and transcribed.
- The gatherings are attracting interested people from other areas, and invitations are going out to other governments. In 2003, this included several employees from the land and resources departments of the First Nations of Little Salmon/Carmacks and Na-cho Nyak Dun, David Natcher (an anthropologist at the University of Alaska Anchorage working with Little Salmon Carmacks First Nation), and Barney Smith (YFWB biologist based in Whitehorse).

Other outcomes

- Recommendations and concerns are usually raised again at the SFN General Assembly in the summer. As there is a common understanding about the topics from the May gathering, it is not too difficult for the FN to arrive at a consensus and for actions to happen.

Other resources

SFN has summary reports of the gatherings, but the tapes have not been transcribed.

Land-based Activities

View from the rear horse in guided hunting parties: Biologist and guides seek alternative ways to hunt grizzly bears, 1978–1988.

Background

- Sustainable harvests of female grizzly bears are low in the Yukon. Hunters can safely take about 1 female grizzly bear from a 2000 square kilometer area each year, and about 2 female grizzly bears per 100 females in the population. These rates seem low to people, but flow from late age at first litter, small litters, long intervals between litters, and low densities.
- Males move more, so concentrated hunting is less serious. About 6 males per 100 males can be safely taken per year.
- In the 1970s and 1980s, many mountainous ecoregions had average annual female harvest rates that were close to or higher than these levels but about twice as many males could be safely taken. There are a number of reasons why solitary females are seen and taken by hunters. It was difficult for outfitters to shift established hunting patterns to change this.
- Since guided clients of big game outfitters take most grizzly bears in these ecoregions, it seemed reasonable to work with outfitters and their hunting guides to find ways to shift hunting from females to males, so that there was less risk of potential overharvest.
- In the 1960s Art Pearson (Canadian Wildlife Service Biologist based in Whitehorse) travelled with guided hunting parties to learn about bear hunting and grizzly bear ecology abundance in different areas of the Yukon.
- Between 1978 and 1988, Barney Smith (Yukon Fish and Wildlife Branch (YFWB) Bear Management Biologist) went on six, 5- to 10-day fieldtrips in 5 outfitting concessions, generally in areas where female harvests were high. The trips were in late August and September. This summary describes some of the methods.

Methods

- Outfitters accepted Barney's offer for to go to their areas. The $100 to $250 per day payment covered food, horses, and space in the tent. Groceries and other supplies were brought in on the plane that Barney arrived in and meat was usually taken out.
- In settings where most of the hunting was from a base camp, the outfitter would arrange for Barney to accompany different parties to see the region. In some cases, he went with 2 guides and their hunters into a spike camp setting distinct from the base camp.

- Barney often travelled with older guides, often first nation men, who had guided in the area for decades, to learn about patterns in bear numbers and distribution. However it was useful to work with the guides who showed the keenest interest in hunting bears to develop alternative bear hunting approaches that would likely yield fewer females.
- Prompted by hunter surname and kill date, a map, and pot of coffee in the cook tent one evening, an outfitter and guide mapped 96 of 104 kills of male and female bears on a 1:250, 000 map. The map showed patterns in how the area had been hunted, and patterns in the spatial distribution of male and female kills (there were more female kills in upland areas). It also showed the weeks in which females were taken.
- Guides, particularly the older ones, were asked about where bear family groups had been seen over the years. Usually they were able to distinguish different females and their young by the colour of their fur. This allowed mapping of a crude minimum unduplicated count of females, and approximation of the distribution of home ranges. In many of these areas there were few family groups seen.
- Guides were skilled observers and shared their knowledge of wildlife. They had many questions about natural history, and wanted to compare interpretations of behaviours they had observed. It was critical to be honest about ideas, interpretations, limitations, and speculations.

Notes on collecting the information and ideas

- Barney participated in the glassing, camp life, and horse handling to support the guide. He rarely participated in stalks.
- One of the unspoken trust rules was that secret hunting areas and trails would not be revealed.
- Maps were rarely seen in hunting camps. Guides did not show hunters maps. They followed trails by their or their horse's memory.
- Guided clients sometimes sought opinions from Barney on hunting strategies. He always deferred to the guide's knowledge of the area and previous hunts. Staying in the tent with the guides, rather than the clients, made this easier.
- It was impossible to glass and take notes on the back of a horse. Barney walked a lot to better see tracks and berries, to stop and glass, or take notes.
- Humour was important in this work, as it is a key way that guides interact.

Notes on using the information

- There were no trip reports. Barney discussed patterns with guides and the outfitter in the camp and at later meetings to allocate bear harvest opportunities. With few exceptions the patterns were pretty obvious.
- With interested guides, Barney discussed alternate hunting strategies such as hunting lower areas, avoiding bears that had a young or female appearance, hunting in the evening, hunting over kills, and more glassing. These ideas had come from analyses of information provided by hunters when reporting their bear kills and from studies of radio-collared bears. It was important to not talk about a successful hunting strategy used by another outfitter; secrets are not shared between competing businesses.
- This was the only way to get an idea of wounding rates and probable losses. The sample sizes are quite small, however.

Other outcomes

- This way of working with outfitters to solve problems was a different way to look at a wildlife biologist's role, and some fellow biologists were not comfortable with this. They viewed the service-to-business aspect of this work, and the riding around in the fall as not being scientific or appropriate.
- The relationships built in camps improved working relationships, and shifted the relationship from adversarial discussions at the November and April meetings with all outfitters as a group, to individual meetings every few years. The quota allocation process described elsewhere in this report built on this way of working with outfitters.
- This work raised issues related to enforcement of the *Wildlife Act* (recovery of wounded animals, recovery of meat with *Taenia sp.* cysts, meat recovery).

Other resources

Smith, B.L. 1980. *Sex-weighted point system regulates grizzly bear harvest.* International Conference for Bear Research and Management 8:375–383.

First Nation crews assess use of habitats by large mammals in mapped vegetation plots: McArthur Mountains/ Ethel Lake vegetation and habitat mapping, 1987. Complete Update-2003 work associated with Ddhaw Ghro Special Management Area planning

Background

- The goal of this study was to look closely at animal use in every vegetation type in the study area. The project was not intended to study traditionally known wildlife areas.
- There was little information on the McArthur Range, except for some air surveys. A unique dark sheep lives in the area.
- The area was a wildlife sanctuary. Two First Nations had interest in it becoming a Special Management Area in their land claims final agreement.
- Wildlife Habitat Canada and Yukon Fish and Wildlife Branch (YFWB) funded the project. Manfred Hoefs (YFWB Chief of Habitat and Research) prepared the study proposal. The goal was to develop vegetation maps, as well as maps showing good areas for sheep, moose and caribou.
- Catherine Kennedy (YFWB Community Ecologist) developed the field procedures and gave 2 First Nations contracts to help do the work. Elders and young men from Selkirk and Na-cho Nyak Dun First Nations assisted in the fieldwork.

Methods

- The First Nations chose the workers for the study and paid them. These men included 2 elders, 2 graduates of Yukon College's Renewable Resources Management Program and a teenager. Elder Dan Van Bibber had travelled in the area in the 1930s and 40s. Elder Alec Joe had trapped in Crooked Creek. Roy Simon was an outfitter's guide outside the study area. The younger men had no experience in the area, and were hunters but had little trapping experience, especially the teen.
- Two female scientists, Catherine Kennedy and Kim Asquith, picked up 2 First Nation crewmembers at their homes and briefed them on the project on the drive to the helicopter base. Crews changed every 3 weeks.
- Because of the sampling schedule, camps were used for 3 days. Then a helicopter would move everyone to a new site. The crew had 16 different camps over 9 weeks.
- Using maps and air photos, the first nation crewmembers chose hiking routes between plots. Watching for wildlife, they quietly guided the 2 or 4-person teams to the next site.

- First nation crewmembers looked for tracks and droppings along a 100-metre line through areas of similar vegetation. The scientists studied the vegetation in circular plots along this line.
- First nation crewmembers set up and ran the camp and made lunchtime fires.

Notes on collecting the information and ideas

- No method was developed to account for different ways that crews noted their animal sign observations (for example, if there was little or a lot of animal sign, or what season the animal used the area).
- Crewmembers' experience on the land and watching for wildlife sign was very important to the success of the study.

Notes on using the information

- Scientists examined the information on vegetation, tracks, and droppings. The large mammal species information was analyzed by species as presence or absence of sign in the 100-m sampling area.
- The technical report described vegetation and habitat based on the crew's work. Vegetation maps and habitat potential maps for caribou, moose and sheep were included. *Habitat potential* means the area should be good for a particular animal species based on vegetation and other characteristics, not that it is an area they are known to concentrate in.
- Each First Nation got a copy of the report, but no one made a presentation to the First Nation or the community. A slideshow on the field program was shown to YFWB staff.
- The study contributed to land claims decisions and planning for a Special Management Area. The maps will support future planning related to the Ddhaw Gro Habitat Protection Area.

Other outcomes

- Young First Nation crewmembers gained experience on the land. Crews watched for bears, handled guns and guided everyone between sample sites.
- Traditional knowledge was not part of the study, but storytelling and information sharing happened in camp. Catherine could not take part in this because she was always preparing for the next day.
- The crew mapped one hot springs area.
- The First Nation crews faced many challenges, including working with female scientists. Some had different ideas about how the land should be mapped or how to choose and set up camps.

- The scientists never knew who would be joining them for the next 3 weeks until just before the helicopter flight. This was a challenge.
- Since this study, much additional work with elders has been part of the planning of the Ddhaw Gro Special Management Area.

Other resources

C. E. Kennedy and K. Asquith. 2001. *Vegetation and Habitat Survey, McArthur Mountains/Ethel Lake Study Area.* Technical report (and associated maps), Yukon Fish and Wildlife Branch, Whitehorse.

Group interviews and camping weekend with elders to learn about use and distribution of a rare fish: Squanga Lake Whitefish, 1996–2003

Background

- The Squanga Lake whitefish is an unusual and small form of the lake whitefish. They are known to occur in only 7 lakes in the southern Yukon. Adults range from 30 to 40 cm long. The late November spawning, soon after lake ice forms, made them an important species for inland Tlingit and Southern Tutchone families. They are 1 of 5 species of whitefish in this region.
- First Nation and Yukon Government fisheries biologists wanted to learn more about the Squanga Lake whitefish and other whitefish in these lakes and talked to elders and other researchers between 1996 and 2002. The key questions they needed to answer considered if Squanga Lake whitefish in Squanga Lake were genetically distinct from lake whitefish, if Squanga Lake whitefish in different lakes were genetically distinct, if elders could distinguish them from other lake whitefish by size, shape, or taste, and if they were failing to produce young as a result of beaver activity in Squanga Lake.
- This was a time when there were many national and local discussions about how to learn about, and make decisions about, *species at risk*. Local discussions focused on this species. The funding for this work was uncertain and varied each year. Most of the funding was provided by the Fish and Wildlife Enhancement Trust (FWET), with cooperative in-kind contributions from the Yukon Fish and Wildlife Branch (YFWB) Fisheries section.
- In 1996, Nick deGraff (YFWB Fisheries Biologist) sent tissue samples from whitefish in Delayee, Squanga and Little Teslin Lakes to Dr. Drew Bodley (University of Manitoba and Department of Fisheries and Oceans research scientist). His mitochondrial DNA analysis did not conclusively distinguish Squanga Lake whitefish as a genetically distinct species. That same year a wildfire changed the forest on the side of Squanga Lake.
- In 1997, Ted Hall (Carcross Tagish First Nation Elder) noticed beavers in Squanga Lake. This was the first time beavers had been seen in the lake in 60 years, and he reported this to the Teslin Tlingit Council (TTC). He believed that beaver dams had lowered lake levels, and sought action to get rid of the beavers. He and TTC were concerned that no Squanga Lake whitefish were spawning at a traditional harvest site above the beaver dam.
- In 1997, the YFWB, TTC, and Paul Sparling (White Mountain Environmental Consulting) obtained funds from the FWET to learn more about the

Squanga Lake whitefish. Paul set nets and looked for juveniles and missing cohorts (fish born in certain years) as evidence of recruitment. TTC encouraged trappers to remove some of the beavers.

- In 1998 this whitefish species gained national significance due to its limited range and uncertain status. It was considered for possible national designation as a *species at risk*. The national group (the Committee on the Status of Endangered Wildlife in Canada (COSEWIC)) decided a review was needed. The Yukon Fish and Wildlife Management Board (YFWMB) recommended more action by the YFWB and TTC. The species was given the COSEWIC designation of *Threatened or Vulnerable*, based on its limited occurrence. A formal assessment and a management plan for the species was needed.
- In June and September 2000, net studies confirmed they were no longer spawning in Squanga Lake at the upper spawning location.
- In 2001, Paul and Juanita Sydney (TTC Wildlife Officer) worked to expand the study. They obtained the cooperation of the First Nation of Kwanlin Dun, Carcross Tagish First Nation, Canadian Parks and Wilderness Society, and YFWB. With TTC in the lead, they obtained FWET funding to document utilization and life history of this species, and a more intensive study of spawning areas.
- In 2002, funding from the federal Habitat Stewardship Program (HSP), allowed a focus on using traditional knowledge to identify lakes to do net studies. HSP required a complete transcript, however this conflicted with TTC traditional knowledge guidelines. The traditional knowledge gathering described here occurred over 3 days in late September 2002.
- Late in 2002, Paul and Nick (now a fisheries consultant) received a contract from COSEWIC to write up the status of the Squanga Lake whitefish. The instructions were clear that no traditional knowledge details were to be in the report, but they were to reference that the information was available.

Methods

- First Nation managers from the TTC, the Taku River Tlingit in Atlin, Carcross Tagish First Nation and Kwanlin Dun identified elders with knowledge of these lakes and whitefish, and invited them to attend.
- Elders were invited to attend a gathering in late September at the Squanga Lake campground. This was later and cooler than organizers had planned, but it took that long for the funding to come through. Participants could sleep at the camp or at a nearby hotel. Two first nation cooks and 3 assistants on contract put plastic on the windows of the 7 by 10 m picnic shelter, kept the wood heater going, brought in comfortable chairs, looked after garbage, greeted visitors, and kept the elders comfortable. Paul

brought several small skiffs with motors for people to use to travel on the lake. Vans were there to drive the elders to other lakes.

- Elders understood they were to come and teach people about the whitefish and the lakes. They expected to visit places, do some map work, tell stories, and eat some fish. They were happy to be together and at the lake. There was no flipchart- it was very informal. Their families were welcome to come as well. Each elder realized that they would have a personal interview of about half an hour with Paul at some point in the session, that they would take turns, and they could decide when they wanted to talk. In most cases other elders listened. None of the elders requested privacy for their personal interview.
- About 40 people camped and 200 more people visited over the course of the gathering. At most, there were 50 or 60 people there at any one time. There were usually about a dozen people in the shelter.
- Eight of the 9 elders who were invited came (including 1 from a nursing home for 1 afternoon), their ages ranged from 72 to 91.
- Elders talked in small groups to Howard Smith (TTC Game Guardian), George Sydney (TTC Habitat Steward, Mark Connor (Contract Biologist, Taku River Tlingit First Nation) and Paul Sparling. Most of the side conversations were conducted by elders so they could get their stories straight before going on record- this process was done entirely at the direction of the elders. YFWB biologists had asked to attend if it would not harm the session, but were told it was best if they were not there.
- On the first day, elders came early and immediately wanted to tell stories. Paul taped some of this - the elders told him when to turn the small tape recorder off and on. The visitors and family members listened intently. Later that evening around the fire, there were more stories from the younger generation. They discussed inconsistencies and linkages, and clarified points. This led to new questions. The elders were delighted at everyone's interest in their stories. Conversations extended to other species and areas.
- On the second day, they drove around in the morning to some sites and visited some lakes in the afternoon. Elders pointed out places and made comments to Paul about the importance of each location visited. The elders were tired by the end of the day and returned to the hotel after supper, but the discussions around the fire continued.
- On the third day, the elders were keener than ever. They arrived at 8:30 and started telling stories. Some said they had been thinking about something all night and "let me tell you this right now". They wanted to get the story straight before they retold it into the tape recorder. They also revisited earlier conversations. After lunch it was a quiet time. After supper people drifted away.

- Paul said the elders took turns telling him things and speaking in one-on-one interviews while he recorded them. He felt it was very important that the session was so unstructured and loose.
- The TTC ended up with about 15 typed pages of recorded transcripts. The conclusions were hard to put on paper, but provided important insights into where the fish were and where to look. There was very little expectation about the write-up - only 2 elders wanted to see the copy.

Notes on collecting the information and ideas

- Paul signed a 2-page agreement with TTC based on their traditional knowledge guidelines that set rules for the interviewing, taping, write-up, and sharing of the information. Paul did not discuss the results of the gathering. No informed consent forms were signed. The 8 elders received travel allowances, and meals and hotels were covered with travel vouchers to each first Nation and Honoraria to each elder.
- Paul used the fastest tape speed for recording on the microtape audiocassettes (45 minutes instead of 180 minutes per tape). He found the small machine recorded the elders' voices surprisingly clearly. It was less intrusive and easy to turn off and put away. There were about 7 hours of tape.
- He carried a small notebook to keep track of who he was talking to on the tape and make notes. He asked if he could write down certain ideas.
- Paul and others took photographs of the gathering. TTC have these photographs.

Notes on using the information

- Seven lakes were identified and netting found Squanga Lake whitefish in 1 other lake.
- Summarizing the information was not easy because Paul could not write down all that he learned, and some of the knowledge did not make sense when written. He used quotes or paraphrased text to illustrate a general consensus. By going over the transcripts he found that discrepancies were less than he had heard - people were just saying the same thing from a different perspective. He realized that some people knew more about Squanga Lake whitefish than others, and so he relied more on their understandings.
- Short reports were prepared for the funders in each year. Transcripts and quotes were not part of the reports for the FWET, HSP, or COSEWIC. Methods used for the gathering are described in the HSP and COSEWIC report.

Other outcomes

- Interest in the whitefish continues, and more research is being proposed.
- Further research into the genetic uniqueness of the Squanga Lake whitefish continues, however these further investigations do not have strong financial support.

Other resources

Bodaly, R.A. 1979. Morphological and ecological divergence with the lake whitefish (*Coregonis* clupeaformis) species complex in Yukon Territory. Journal of the Fisheries Research Board of Canada 36:1214–1222.

Horler, A. 1982. Estimating fish yields on select Yukon Lakes using the morphoedaphic index. Department of Fisheries and Oceans, Whitehorse.

Bodaly, R.A., J.W. Clayton, and C.C. Lindsay. 1988. Status of the Squanga Whitefish, Coregonus sp., in the Yukon Territory, Canada. Canadian Field-Naturalist 102(1):114–125.

Frank James. 2000. Squanga Lake Resource Report. Canadian Parks and Wilderness Society. Whitehorse.

Rosie, Rhonda, B. Slough, F. James, M. Jennings. T. Heakes and T. Hall. 2001. Squanga Lake Area: A preliminary report on the findings of a biological survey at Squanga Lake and area, September 2000. Canadian Parks and Wilderness Society Yukon, in cooperation with the Teslin Tlingit Council and Carcross/Tagish First Nation.

Yukon Government Fisheries Section. 2000. Squanga Lake Fisheries Assessment- August 2000. Draft summary of progress report.

Sparling, Paul. 2003. Draft COSEWIC Status Report on Squanga whitefish *Coregonus vvv.* Prepared for review and status designation by the Committee on the Status of Endangered Wildlife in Canada.

Patrol, watch, intercept, inform, and sometimes scold: Guardian initiatives- 1993 and ongoing.

Background

- In Yukon communities patrol work to 'look after animals' is seen to be important and essential.
- Part-time patrolling by individuals called Guardians, Monitors, or River Wardens occurs in many communities as funds allow. While it is tempting to call these dozen initiatives a program, the work varies between communities and between years as priorities shift.
- Most of the funding in the early years came from the Fish and Wildlife Enhancement Trust. This source of funding was flexible enough to allow initiatives respond to regional and community needs rather than conform to a program. This allowed a lot of variation, experimentation, and learning.
- All but one of the initiatives (Southern Lakes Caribou Recovery) has been administered by a Yukon First Nation, and all guardians but one have been first nation men.
- The flow of information back to the community is usually informal. One guardian said "Gee. I've never been inivited out to dinner so much till I got this job." People ask guardians about the condition of roads, trails, camps, industrial sites, animal concentration areas, and who is active where.
- In December 2000, the Yukon Fish and Wildlife Management Board (YFWMB) received a report they had requested that defined the initiatives underway then, and looked at the many roles that the guardians were involved in. This report was based on interviews with guardians and their supervisors.
- In February 2002 and 2003, guardians met at Champagne for 2- and 3-day workshops. They discussed how and what they did, what worked best, and what they needed to be more effective.
- There are many government people who want guardians to collect information, to serve in an environmental monitoring role, and to fill in data sheets. This has been a challenge, as the strength of most guardians lies in their knowledge of the landscape, their ability to detect if anything is amiss, and the way they can make sure the right people know so that something gets done. Few guardians enjoy writing.
- The YFWMB's primary strategic direction in 2002 was to promote stewardship. Under a stewardship (promotion) initiative funded by the Walter and Gordon Duncan Foundation in 2002 and 2003, Jocylyn McDowell (YFWMB Stewardship Coordinator) worked with guardians,

photographing them in their work, and sharing some ideas related to stewardship.

- The story of each guardian initiative needs to be told by the first nation, Renewable Resources Council, or program they work for.

Other resources

Southern Lakes Caribou Recovery Steering Group. 1996. Southern Lakes Caribou Recovery Program Progress Report, 1992-1996. Available from Environment Yukon, Whitehorse.

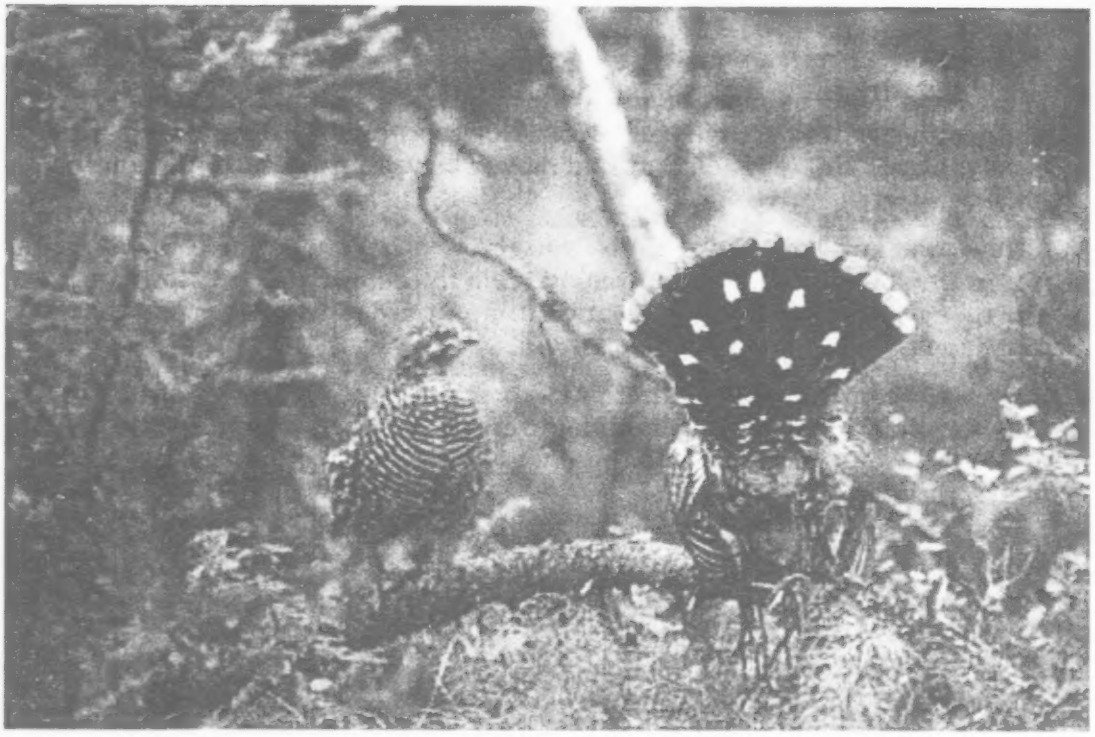
Smith, B.L., K. Egli, and L Laberge. 2000. *Guardians in the 2000's*. Discussion paper prepared by the Yukon Fish and Wildlife Branch. Whitehorse.

Smith, B.L. 2002. Game Guardian Workshop Summary-2002. File report, Yukon Fish and Wildlife Branch. Whitehorse.

McDowell, J. 2003. Game Guardian Workshop Summary-2003. File report, Yukon Fish and Wildlife Management Board. Whitehorse.

Note: Individual Yukon First Nations have compilations of information from patrol logs and questionnaires.

Peer to Peer Idea Exchanges



Peer exchange: Aklavik hunters visit Paulatuk to learn about muskox hunting techniques, 1996

Background

- There is no living memory of muskox living on the Yukon North Slope; they went extinct in this area in the 1860s. However, by the 1980s there was a herd of about 160 animals that had moved east from a reintroduction in Alaska.
- At one time, muskox were seen only in the western part of the coastal plain, but in the 1990s people began seeing them in the Richardson Mountains, and along the Porcupine and BonnetPlume Rivers. This suggested that there had been an increase in the population.
- Hunters became concerned that muskox might displace caribou from important calving and early summer areas. They wanted to hunt the muskox to curb increases and there was broad support for a management plan that included quotas.
- In 1994, the Yukon Fish and Wildlife Branch suggested 8 possible projects to learn about the muskox in support of management planning. Aklavik Hunters and Trappers Committee (HTC) and Wildlife Management Advisory Committee (North Slope) (WMAC(NS)) members expressed strong support for the project that involved sending delegations to visit and learn from communities that hunted muskox. The proposal was to send pairs of Aklavik residents (1 man and 1 woman from different families and age groups) to each visit 1 of 4 communities, to learn about muskox through interviews and participation in hunts, to prepare summary reports and to provide community briefings.
- Hunters at Paulatuk offer guided hunts for bull**Error! Bookmark not defined.** muskox (sport hunts) as well as hunt muskox for hides and meat (subsistence hunts).
- The Inuvialuit Final Agreement does not allow non-resident hunters to be guided on the Yukon North Slope or in Ivvavik National Park.

Methods

- After many discussions, the Aklavik HTC and WMAC(NS) decided to send 5 hunters, including 1 elder to Paulatuk from November 20 to 24, 1996. This cost $13,000. [They also decided to send a hunter and his wife by snowmachine to Kaktovik in the spring to interview, photograph, and videotape Kaktovik families and hunters].
- The proposed visit to Banks Island was not supported by WMAC(NS) because there were concerns that the negative perceptions about the 85,000

muskox there, the cull, and the dwindling caribou numbers would not be relevant to the Yukon North Slope.

- The hunters met with the Paulatuk HTC members on the evening of their arrival in Paulatuk. The following day, 2 experienced muskox hunting guides led the 5 hunters on rented snowmachines 70 km south to a camp near treeline and the Horton River. The Paulatuk guides showed the Aklavik people how to locate, identify, stalk, and process a large bull the next day. Guided sport hunters must stalk animals for 1 mile on foot. Aklavik hunters helped skin the animal (particularly the head), and remove the horns and salt the hide to prepare it tanning and taxidermy. The horns were measured and scored.
- The next day a second hunt occurred. It was oriented towards selecting a prime meat animal (a dry cow) for subsistence use, boning it for burger, and preparing the hide to be sold for other uses. This included training in how to use snowmachines to herd muskox.
- For both animals, tags were attached to hides and guides completed harvest data sheets.

Notes on collecting the information and ideas

- There is much learning that goes on by all individuals involved in the billets, hunts, and organizations.
- There were important cultural and social dimensions to this learning.

Notes on using the information

- After returning to Paulatuk, meetings were held to discuss management of sport hunts and to address other questions with the HTC.
- The hunting guides prepared a diary/summary of the hunt and related activities.
- Details of how the Aklavik hunters shared their experiences within the community on their return are not known.

Other outcomes

- Some saw this as an expensive learning process.
- The visits did not change opinions in the community about muskox displacing caribou, and there is still an interest in a quota to hunt these animals to keep numbers down to prevent any risk of negative effects on caribou.
- Hunters are sensitive to wording that suggests they lack skills or need training. However, when you want to know about a certain animal it makes sense to visit people who know this and go on a hunt with them.

Other resources

Paulatuk Hunters and Trappers Committee. 1996. *Aklavik Muskox Hunt Training.* Report prepared for the Wildlife Management Advisory Committee North Slope.

Peer exchange: Alaskan master brown bear guide tells outfitters ways to distinguish and hunt large males, 1989.

Background

- Sustainable harvests of female grizzly bears are low in the Yukon. Hunters can safely take about 1 female grizzly bear from a 6000 square kilometer area each year, and about 2 female grizzly bears per 100 females in the population. These rates seem low to people, but flow from late age at first litter, small litters, long intervals between litters, and low densities.
- In the 1970s and 1980s, many mountainous ecoregions had average annual female harvest rates that were close to these levels. In these areas about twice as many males could be taken. There are a number of reasons why solitary females are seen and taken by hunters.
- Most hunters take the first legal (solitary) bear they see. Few Yukon guides have experience and skill to accurately determine the sex, size, and weight of grizzly bears.
- Male bears move about more, so the consequences of concentrated hunting are less serious. About 6 males per 100 males can be safely taken per year.
- Since guided clients of big game outfitters take most grizzly bears in these ecoregions, it seemed reasonable to work with outfitters and their hunting guides to find ways to shift hunting from females to males, so that there was less risk of potential overharvest.
- Project funding from an economic development agreement was available in the late 1980s. The Yukon Outfitters Association received money to make a video to illustrate ways to distinguish between male and female grizzly bears. Alaskan bear managers recommended that Joe Want, a master bear guide, provide ideas as part of this research. Joe agreed and visited with Yukon outfitters and with the team making the video.

Methods

- Barney Smith (Yukon Fish and Wildlife Branch (YFWB) Bear Management Biologist) met with Joe at a meeting with bear biologists at the Alaska Department of Fish and Game. Ideas were exchanged on how to shift hunting so that hunters would take males, rather than females. Joe, based on his personal experience, had a wealth of ideas and much confidence about this. He was used to skepticism about whether this was possible. He was pleased that a video was being made.
- In the spring of 1989, Joe was invited to Whitehorse for a weekend to share his ideas. He gave an afternoon presentation to Yukon outfitters using slides from an Alaskan biologist. He talked about how he distinguished male from female brown bears, large-bodied from small-bodied males, and large-

headed from small-headed adult males in his Kodiak Island guiding operation. His advice was respected because of his reputation of consistently taking the largest brown bears in the world, his informal and convincing manner, his confidence that these approaches could be applied to interior grizzly bears, and his reference to practical stories. He drew pictures on a flipchart to help make some points.

- He later had dinner with several outfitters and expanded on these ideas and provided additional business advice related to bear hunt marketing.
- Joe spoke with Barney at length about these and related ideas that were then incorporated into the video.

Notes on collecting the information and ideas

- The peer exchange was critical in countering skepticism, addressing concerns, and providing detail that was relevant to the outfitters.
- Much of the success related to Joe's personality and communication style. He spoke from the heart, using lots of stories and examples, humor, and convincing comparisons that left the outfitters with much more confidence that this was possible.
- Joe was at such a sophisticated skill level, in another ecosystem and hunt management system that sharing his ideas was not an economic risk to his operation. In fact, stories of his presentation to visiting hunters would likely enhance his reputation. A peer from within the Yukon would have been less willing to share details with competitors.
- Joe appreciated how his ideas were valued in the Yukon system, and provided a lot of encouragement to the video project.

Notes on using the information

- Two examples are useful to illustrate Joe's skill at using analogies. To convey confidence, he said everyone in the room would be able to accurately judge the sex of at least 90 of 100 different black labs if the dog's head was put through a hole in sheet of plywood so only their head was visible. He said that your eyes see the same patterns in head shape in bears and you need to trust it. To communicate how to interpret the variation in bear shape, he said, as in people there were different characteristics for heavy-ness, old-ness, and male-ness. He then explained this.
- Two examples illustrate his skill in using stories to convey how wary old bears were. One story involved his helping his audience recall all the situations they had bumped into animals (including large bears) as they swiftly and quietly returned to camp in the evening. He then explained how he now insists on no talking while bear hunting. The second story involved observing a bear receiving human scent on a puff of wind and seeking cover

in a willow patch. He described how later investigation showed the bear hid there all day until dark.

- The 12-minute video used and illustrated many of Joe's ideas and he was credited (some ideas were so sophisticated they needed to go in a later video).

Other outcomes

- There was a lot of interest in the video and these ideas for a few years.
- A booklet was prepared that examined a dozen ways that hunters could be in a better position to encounter male rather than female bears.

Other resources

The video *"Take A Closer Look"* is available from the Yukon Fish and Game Association, 4061 4th Avenue, Whitehorse, Yukon, Canada. Y1A 1H1. It shows hunters how to tell older adult males from females and smaller males.

Barney Smith. 1990. *Hunt Wisely: A Guide to Male-Selective Grizzly Bear Hunting.* Extension Report, Yukon Fish and Wildlife Branch, Whitehorse.

Personal Interviews and Household Visits

Individual mapping interviews help map key wildlife areas: Southeast Yukon, 1983.

Background

- In the early 1980s, the federal government produced the Northern Land Use Information Series maps at a scale of 1:250,000. Yukon Fish and Wildlife Branch (YFWB) felt that they needed more information to assess the impacts of proposed developments on wildlife.
- YFWB decided to develop new maps, beginning in the southeast Yukon.

Methods

- Over a 4-week period in the summer of 1983, Beth Ereaux (Hawkings), YFWB Habitat Technician, and assistant Janet McDonald collected wildlife information through interviews with area residents.
- They began by asking the Conservation Officer and Resource Management Officer to suggest knowledgeable area residents to interview.
- This list expanded as people interviewed suggested others.
- Janet did the interviewing because she had grown up in the area and knew many people. Beth took written notes.
- They interviewed 44 people and their partners.
- People indicated the areas in which they had observed wildlife on 8 1:250,000 maps.
- Janet hand drew polygons (outlines on the map) to indicate these areas and made notes about what they meant. When someone later made similar observations, their personal identification code was added to the polygon.
- Beth made detailed notes of each interview on a data-recording sheet.
- Janet began each interview with 5 general questions and a review of the maps that showed previously marked polygons to indicate the kind of information they wanted.
- She did not review every polygon with all people interviewed.
- Beth and Janet asked people to identify which areas were important to what wildlife species in what seasons.
- They asked for information on sheep, goats, moose, caribou, bear, waterfowl, raptors, other birds, furbearers, and other animals that had been observed.
- They asked for current, not historical information.

- They asked for information on the animals themselves, not for comments on habitat capability (i.e. how many animals the land could support).
- Interviews lasted an average of an hour.

Notes on collecting the information and ideas

- The individual's experience and activities determined the kind of answers they gave interviewers.
- Pilots with a long history in an area provided very useful information.
- People who were on the land only in specific areas or during specific seasons offered more limited information.
- Some trappers had limited knowledge of their trapline and could only report on those areas they regularly travelled or actively trapped.
- Outfitters protected information such as the location of mineral licks in their areas, although they pointed them out in neighboring concessions.
- Beth and Janet interviewed only 3 or 4 first nation people.
- Beth and Janet did not tape interview sessions.
- The Branch did not pay honoraria for the interviews.

Notes on using the information and ideas

- Beth and Janet drove to several key habitats near the road following the house visits and information gathering.
- They also spent 10 hours of helicopter time visiting key sites and remote area residents.
- Their site visits helped them to assess the accuracy of locations identified. It also helped them to assess whether the sightings people had reported indicated key habitat. (Key wildlife areas are areas important to particular wildlife for particular functions during particular seasons. For example, birthing areas or winter forage areas. There is an understanding that less of these areas will mean fewer individuals of that species can live in the region).
- They also matched reported sightings against wildlife surveys and studies.
- The maps later included information from aerial surveys, wildlife survey reports and conversations with species biologists.
- The habitat section transferred identified key habitats areas to species-specific sets of maps (one set of maps for moose, etc.) to assist more efficient land use decision-making. Colour codes indicate the type of information.

- Some map areas were blank and had no polygons drawn in because there had been no wildlife surveys in those areas or people had not been there. Others were blank because no one saw animals in those areas.
- For that reason, the habitat section kept a separate set of maps that showed areas where they didn't have information on key habitats.

Other outcomes

- Map-readers should know that blank areas on maps might indicate a lack of information not necessarily a lack of importance to wildlife.
- In 1986, Beth Ereaux digitized the collected information (put it on computer) and created a digital database. She documented the exact source of information for each polygon in the database.
- Database design is important to allow future merging (comparisons of information). In this project Beth used 6 season codes, 10 species group codes, and 2 number, 2 letter identifier codes.

Other resources

Beth Ereaux, 1986, *Wildlife Area* Mapping *Project Southeast Yukon,* File report prepared for the Yukon Fish and Wildlife Branch, 16pp.

Val Loewen and Marcus Waterreus, 2002. *A Summary of the Wildlife Key Areas Program.* Report prepared for NatureServe Yukon and the Yukon Department of Environment.

Quantifying perceptions of abundance: outfitters provide estimates of grizzly bear numbers for mountainous uplands, 1985

Background

- Twenty big-game outfitters hold monopoly rights to guide non-resident hunters in concessions that range in size from 3,000 to 36,000 square kilometers.
- Outfitters learn about how much and where game is found in their areas. They learn by guiding on horseback and on foot, from regular flying between hunting camps, and from other guides who know the country.
- They knew where animals were in the open, game-rich subalpine areas (immediately below the high alpine treeless areas), and in the alpine uplands.
- In 1979 the Yukon Fish and Wildlife Branch (YFWB) set grizzly bear quotas for each outfitter based on recommendations from Grant Lortie (YFWB Big Game Biologist). Drs. Fred Bunnell and David Tait at the University of British Columbia used computer models to develop the harvest rates.
- The quotas came from population estimates that Grant made based on studies of collared grizzly bears in 5 areas (2 Yukon and 3 interior Alaska).
- Outfitters argued that the estimates, based on grizzly studies in other areas, were low. They said that the YFWB was unfairly limiting their bear hunting. They hired Acres Consulting to challenge the computer modeling and examine the quota system.
- By 1983, it was clear that the annual quota system was not working well for most outfitters. The Wildlife Branch and Yukon Outfitters Association wanted to improve grizzly bear management in 4 ways:
    - Three scientists made new population estimates based on new studies for the 22 ecoregions;
    - Barney Smith (YFWB Bear Management Biologist) and 3 outfitters designed a new point system to provide outfitters with more flexibility and incentives to take males and disperse harvests;
    - Barney visited camps where female harvests were high and disagreement over population estimates was most acute; and
    - Outfitters provided their ideas on grizzly bear numbers in areas that they knew well.
- This summary looks at the last item on this list. Another summary looks at the visits to the camps and participation in the hunts.

Methods

- In 1985, Barney Smith and Tena Fox (YFWB Bear Management Technician) met with outfitters and their chief guides in a series of private 3-hour meetings. They discussed:
  - grizzly bear behaviour,
  - population ecology.
  - grizzly bear harvest points, and
  - whether their hunting plans would maintain the health of the grizzly population in their outfitting area (were sustainable).
- They talked about the 1 - 4 ecoregions in each concession. Outfitters were asked to rank ecoregions in their concession areas according to the density of grizzly bears (see Notes on collecting the information and ideas below.).
- In all but one case, the outfitter rankings agreed with the biologists' estimates. However, outfitters said that they knew little about grizzly bears in many forested ecoregions.
- Staff also asked outfitters about:
  - the distribution of bear foods,
  - bear sightings in different seasons,
  - hunting methods, and
  - denning areas in each ecoregion.

Notes on collecting the information and ideas

- To determine densities, staff first asked outfitters to indicate on a 1:250,000 or 1:500, 000 map where they did most of their hunting.
- Then they asked them about the number of grizzly bears in those areas.
- Most said they did not know.
- They were then asked if there were 500 bears?
- If not, were there more than 90?
- By going back and forth between high and low possible estimates, eventually outfitters settled on a number that they thought was reasonable, based on the animals they had seen.
- One outfitter refused to participate in this process.
- Many outfitters thought that this process was a quota negotiation.

Notes on using the information and ideas

- Tena used a planimeter to measure the areas the outfitter had circled. She then converted the estimates developed through the method detailed above into densities (number of grizzlies per square kilometre). Then, with the outfitter, they compared the calculated densities to the ecoregion density estimates of the 3 grizzly bear biologists.
- The estimates were usually similar.
- The YFWB used both the biologists' and the outfitter's density estimates to set harvest ceilings for grizzlies. If there were differences in density estimates, it usually translated into a 5 to 20 bear difference in the number of bears, not enough to influence the harvest calculations.
- These ceilings became part of a harvest point management system the YFWB developed with the Yukon Outfitters Association.

Other outcomes

- This "bounding" process lowered tensions between outfitters and YFWB over population estimates.
- Sharing uncertain estimates showed honesty and the need for a careful management approach.
- YFWB got more cooperation than it would have if it claimed the biologists knew everything.
- Outfitters recognized that biologists were best qualified to estimate sustainable harvest rates based on population densities.
- In 1991, a video was produced, based in part on information provided by an Alaskan master guide, to assist guides to select large male bears and avoid hunting females. Case #

Other resources

Smith, B.L. 1980. *Sex-weighted point system regulates grizzly bear harvest.* International Conference for Bear Research and Management 8:375–383.

Smith, B.L. 1995. *Education to promote male-selective grizzly bear hunting in the Yukon, in* S. K. Jacobson (Ed), Conserving Wildlife – International Education and Communication Approaches, New York: Columbia University Press

Interviews with technical and local experts to map habitats: Grizzly bears in the Kluane Land Use Planning Region, 1989.

Background

- Land use planning began in the Greater Kluane Land Use Planning region in 1988.
- The planning program paid for technical studies to map land, water, and wildlife values in the region.
- One project aimed to map lands important to grizzly bears. The mapped information would help develop zoning and land use recommendations:
  - to reduce conflicts between grizzlies and humans, and
  - to reduce development impacts on grizzly bears in the valley floor, lakeside and forest habitats of the region.
- The Greater Kluane Land Use Plan was written by the Yukon Regional Land Use Program under the federal Northern Affairs program, but was never been formally adopted. It is a recommendation-based plan, not a plan that has maps zoning lands for particular uses.

Methods

- The grizzly bear habitat-mapping project was a chance to test low-cost alternatives to new studies.
- It used 3 methods: previous bear studies, vegetation maps, and interviews with local residents.
- Method 1 mapped areas grizzly bears used in particular seasons. These were laid out in Art Pearson's study of grizzly bears in Kluane Park between 1966 and 1972.
- Method 2 mapped potential high-use grizzly habitat areas based on 3 different vegetation-mapping processes that were used in different parts of the region. Four scientists (Manfred Hoefs, Art Pearson, Barney Smith, and Ron Sumanik) used their knowledge of bear diet and habitat selection to separately rank vegetation for its value to grizzly bears. They based their work on botanists' descriptions of the cover, size and type of vegetation mapped on 1:50,000 to 1:100,000 scale maps. When 2 of 4 biologists ranked the same vegetation type as potential key habitat, it was identified on the map.
- Method 3 mapped blocks of land that knowledgeable residents and scientists said grizzly bears used heavily. These were often specific berry batches and river flat areas. The next section details this method.

Notes on collecting the information and ideas

- Two Yukon Fish and Wildlife Branch (YFWB) staff, Marcus Waterreus and Debbie van de Wetering, did the interviews. They talked to 15 people, including 1 first nation person. These people knew about grizzly bears and where they went within the land use planning region.
- Interviewers talked to people in their homes for 30 to 45 minutes.
- They began with 1 general question about the planning process and 3 questions to find out how familiar the person was with the area.
- They next asked 9 questions about how they used the map area.
- Interviewers asked 6 questions about each of 13 wildlife species and filled out key habitat forms for each species.
- People marked areas on a 1:250,000-scale map to show places that they knew grizzly bears used a lot.
- They thought important habitats were areas where grizzlies were often seen. They often marked in areas (polygons) of about 1000 square kilometres.
- For each polygon, interviewers took notes of the number of animals that people said regularly used the area. And they asked them why they thought the animals were there.
- Interviewers asked residents if they agreed with the vegetation map that identified important grizzly habitats.
- They also asked if, or what, wildlife habitat areas should be protected.
- They asked people if they would let their names be used as a reference in the wildlife sector report.
- Finally, they asked for the names of other people who knew a lot about wildlife in the planning area.
- People were not paid for the interviews.
- Ron Sumanik wrote the report on the process. He considered sites mapped by area residents to be "potentially key habitats." But he also raised the concern that this method may give a biased estimate. He noted that it was easy for area residents to overestimate the level of bear use:
    - in particular habitats where it is easy to see animals,
    - where people tend to travel,
    - where animal sign is easily seen, and
    - where animal sign lasts for a long time.
- Photographs of typical vegetation in specific map areas gave scientists a lot to work with when they did the assessments.

Notes on using the information and ideas

- Habitat mappers used information that came from all 3 methods to identify the "key habitats". They mapped the habitats for use in land use referrals and planning.

Other outcomes

- Area residents who often flew in the area tended to provide the most useful information.
- The study showed how the YFWB could use local understandings to assess wildlife risks to human safety.
- Ron concluded that it was not enough to just map some important habitats. To reduce conflict between bears and humans in the planning region it was important to have guidelines that applied throughout the area.

Other resources

Ron Sumanik. 1989. *Identification and mapping of key grizzly bear habitat in the Grater Kluane Land Use Planning Region and its implications to land use planning*, Yukon Fish and Wildlife Branch report.

Debbie van de Wetering and B.L. Smith. 1989. *Guidelines to minimize conflicts between bears and people.* Prepared for the Greater Kluane Land Use Planning Commission. Yukon Department of Renewable Resources.

Government of Canada and Government of Yukon. 1992. *Greater Kluane Regional Land Use Plan.* Yukon Regional Land Use Planning Program, Northern Affairs Program, Department of Indian Affairs and Northern Development, Whitehorse.

Personal interviews with 66 first nation hunters provide poll-type information: Moose recovery in the Coast Range, 1989.

Background

- Game Management Zones 7 and 9 are south of the Alaska Highway, west of Teslin Lake, and east of the Haines Road. This area includes the Coast Mountains.
- This area had low moose numbers in the 1930s. Moose recovered from the 1940s onward and were very important to hunters in the area. By the 1970s, over 250 moose were taken by licensed hunters each year, and maybe as many by First Nation hunters.
- In the 1980s Doug Larsen (Yukon Fish and Wildlife Branch (YFWB) Moose Biologist) counted moose in 4 different areas. These counts suggested few young were surviving and that there were too few moose to sustain the hunting that was happening. In 1983 and 1985 he radio-collared moose calves and showed that grizzly bears took half the newborn calves. Wolves also killed calves, so fewer than 1 in 5 calves survived their first 6 months.
- Moose numbers dropped in the late 1970s. This decline had an impact on hundreds of local families. By the early 1980s this decline had slowed or stopped partly because a cow moose season was stopped in 1982 (after being in effect for 5 years), bull hunting was limited through permits, and government reduced wolf numbers and increased grizzly bear hunting opportunities.
- Six First Nations have often overlapping traditional territories in this area. All of these First Nations were busy in land claim negotiations and, while they were aware of the problem, were not partners in improving the situation.
- In January 1989, Brian Pelchat (YFWB Chief of Big Game) contracted Lawrence Joe (Champagne and Aishihik First Nations (CAFN) member) to discuss the situation and study the views of first nation hunters in Game Management Zones 7 and 9. Their views and support were essential in finding long term solutions to this problem.
- Lawrence later worked with a Yukon Fish and Wildlife Management Board working group that looked at moose and caribou recovery needs north and south of the Alaska Highway.
- The story of moose declines and responses to the declines in this region is complex. November moose counts in various areas showed low calf survival. There were calls for programs to reduce numbers of bears, wolves, and kills by hunters. Each program was controversial and generated much public debate.

Methods

- Lawrence sent a letter to the other First Nations explaining the study. He also asked for a list of active hunters, respected elders and other knowledgeable people in the community who used this area. His final list had 106 names on it.
- Each person on the list got 5 pages of information including letters, cartoons and maps. The package explained the studies and proposed rule changes.
- Lawrence interviewed 66 of the people on his list. It was done informally and did not involve written questions or a survey. He listed the overall results on 1 page, and then wrote a 1-page summary for each First Nation's results. Lawrence also included all additional comments at the end of each report.
- Lawrence concluded that the information from the 66 interviews was enough. He said that more interviews would not add new information to the results.

Notes on collecting the information and ideas

- The YFWB contracted 1 First Nation (CAFN) to interview the others. A first nation interviewer controlled the research project. The First Nations gave the names of hunters who actively use the area.
- Participating First Nations included CAFN, Kwanlin Dun, Ta'an Kwach'an, Teslin Tlingit Council and Carcross Tagish First Nation.
- When Lawrence did the interviews, there had been lots of media stories about moose calf survival studies and wolf control. Some of the people he talked to may have been influenced by what they heard in the media. The 5 pages of information they had received and reviewed just before the interview may also have influenced them.
- Lawrence's interview style was informal. He also gave people information that related to First Nation roles in managing wildlife through the Council of Yukon Indians Umbrella Final Agreement.

Notes on using the information and ideas

- The views of first nation hunters in the region confirmed that this was a complex situation with many causes, and that there were no easy solutions.
- Lawrence's interviews collected observations from over a much longer period of time than the scientific research.
- Looser bear and tighter moose regulations continued.
- Presenting ideas as *% in favour* or *% that believe* is not usually done in interview studies with elders, but it was helpful in deciding new rules. Busy first nation councillors appreciated the 1-page summaries.

Other outcomes

- When caribou hunting restrictions were considered in the Southern Lakes, these same First Nations chose not to request hunters to stop hunting moose.

Other resources

Manfred Hoefs. 1979. *The status of moose in the* eastern *half of GMZ 9 – the Teslin Burn.* Yukon Fish and Wildlife Branch TR-79-01.

Lawrence Joe. 1989. *Summary of band comments on the management of big game within southwest Yukon.* Report prepared for the Yukon Fish and Wildlife Branch, Whitehorse.

Doug Larsen and Dave Gauthier. 1985. *Management Program Draft Proposal—Options for increasing moose numbers, southern Yukon.* Discussion Paper, Yukon Fish and Wildlife Branch, Whitehorse.

Doug Larsen, David Gauthier, and Rhonda Markel. 1989. *Limiting factors on moose population growth in the* southwest *Yukon.* Yukon Fish and Wildlife Branch TR-89-7.

Bob Hayes and Alan Baer, 1986. *Wolf population research and management studies in the Yukon – 1984 annual report.* Yukon Fish and Wildlife Branch PR-86-1.

Doug Larsen and Rhonda Markel, 1989. *A preliminary estimate of grizzly bear abundance in the southwest Yukon.* Yukon Fish and Wildlife Branch TR-89-8.

Bringing together archival information and maps made with trappers, elders, and geologists: The historical distribution and size of the Fortymile caribou herd, 1990

Background

- Government biologists and researchers on contract collected and evaluated archival material about the historic distribution and population size of the Fortymile caribou herd. They also interviewed first nation and other elders. This information was mapped and written-up in reports. They used these reports in various ways to promote and evaluate a program aimed at the recovery of this herd.
- The Fortymile herd once numbered in the hundreds of thousands. These caribou ranged widely in the west central and southwestern Yukon and adjacent east central Alaska.
- In the 1920s, the herd numbered about 550,000 but it declined by the 1940s. It recovered in the 1960s then dropped again to 5000 by 1973, rarely coming into Canada.
- In 1986 Rick Farnell (Yukon Fish and Wildlife Branch (YFWB) Caribou Biologist) and Doug Urquhart (contractor) prepared a report using archival information and photos to describe this important herd's history. This report promoted international interest in a program to recover the Fortymile herd.
- Tr'ondëk Hwëch'in First Nation (THFN) and YFWB participated in 2 planning processes:
    - to develop a management plan for Alaska for 1996 - 2001. This plan, sponsored by US Bureau of Land Management, US Fish and Wildlife Service, US National Park Service and Alaska Department of Fish and Game was accepted by the Alaska Board of Game in October 1995. Both THFN and YFWB remained on the planning team to implement the plan until the sunset date of December 2001.
    - to develop a harvest management plan for the herd for 2001 - 2006. This plan allocates 35% of a total herd harvest to Yukon and details how the Alaskan allocation is to be managed. This plan was accepted by the Alaska Board of Game in spring 2000. The Fortymile Caribou Herd Working Group, established under the 1998 Tr'ondëk Hwëch'in First Nation Final Agreement, is responsible for the Canadian allocation.
- Eight of the 18 first nation people interviewed in 1990 had died by 2000. This emphasizes the urgency of collecting this type of information.

Methods

- In 1990 the Canadian Wildlife Service provided contract funding for an interviewer, Janet McDonald, to first intensively study materials in the Yukon Archives for 1 month, and then spend an additional month interviewing elders. A few interviews were also done in 1986 and 1993.
- Janet interviewed 18 First Nation and 12 non-native elders over a month in the spring of 1990.
- Janet is of Yukon Indian descent and worked as a caribou technician for 10 years prior to this work.
- Prior to visiting first nation elders, Janet first phoned the chief or a councilor to tell them about the project. She also visited the First Nation office and stayed with a relative in the community.
- Janet talked to people in their own homes for about 1 hour. She only taped a few of the interviews.
- Janet first found out where and when the elder had experience with caribou, by referring to 1:250 000 maps. These maps showed information from the archives and previous interviews.
- Janet used a data sheet to prompt questions, so that each person was asked similar questions. This information sheet was similar to the key wildlife area forms developed in 1983. Janet's maps have margins full of her notes from these and previous interviews.
- Elders were not paid, except in 2 cases involving very long sessions, for which they received $20 and $40.
- Janet prepared a draft report on her findings.
- Dorothy Cooley (YFWB Northern Regional Biologist) put some of the information from interviews into digital form to allow her to make maps using a computer for meetings of the Fortymile Caribou Recovery Group.

Notes on collecting the information and ideas

- People were excited to use traditional place names. This built trust and probably made the locations more exact.
- Since the annual cycle of first nation people centered mainly on rivers, there was little knowledge of herd's range away from the rivers.
- The huge amount of information collected on maps was difficult to summarize and to distribute to all collaborators in this international project. This delayed the completion of the final report.
- Everyone interviewed marked locations of caribou on a 1:250 000 topographic map.

- Reminding elders about fires, road construction, or other historical events prompted memories.
- Janet had a detailed knowledge of caribou biology, historical details, and river-based lifestyles. This improved the quality of the interviews because respondents knew she would understand more detailed answers.
- One elder told Janet about a famous shaman who had prophesied the decline and recovery of this herd.
- Janet's 18-month-old daughter accompanied her in many of the interviews. Elders seemed to enjoy this.

Notes on using the information and ideas

- The computer allowed maps to be made that showed where the caribou lived in different periods and seasons, and also to show where the herd ranged when the caribou herd was larger. This is important because the herd was only in Alaska when it was smallest, and when it was largest ranged southeast to the Aishihik area. In terms of planning the recovery, it is important to know where the herd ranged when it was around 50,000 or 100,000 or 500,000 animals.
- Elder Tommy McGinty sang some traditional songs for Janet. She played his singing at the Yukon Fish and Wildlife Management Board's traditional knowledge conference in 1998, and later gave the tape to Northern Tutchone storyteller Louise Profeit-LeBlanc.

Other outcomes

- The archival research at the University of Alaska at Fairbanks and the Yukon Archives provided black and white photographs of caribou crossing rivers with paddlewheelers in the background, dead caribou at fish and mining camps, and caribou hunting activities along the highway. These images were particularly important in conveying how immense the herd had been and how significant it had been in people's lives 50 years prior to the management planning.

Other resources

Doug Urquhart and Richard Farnell. 1986. *The Fortymile Herd on the comeback trail to the Yukon.* Yukon Fish and Wildlife Branch, Whitehorse.

Yukon Fish and Wildlife Management Board. 2001. *Two Eyes: One Vision.* Conference summary hosted by the Yukon Fish and Wildlife Management Board, April 1–3, 1998. (See description of this project *Use of local knowledge-Piecing together the range of the Forty Mile herd*, pages 10–11.)

Interviews with elders look at animal population abundance over 70 years: Two First Nations look at historical abundance of Kluane and Aishihik caribou herds, 1993

Background

- Interviews and surveys in the 1980s involving researchers, residents and elders showed declines in caribou numbers. Outfitters did not report any declines.
- A major project began in 1993 to rebuild caribou populations. The Aishihik and Kluane Caribou Recovery Steering Group wanted to collect traditional knowledge about caribou abundance for this recovery project. The *Yukon Wolf Conservation and Management Plan* recommended traditional knowledge studies as well.
- Kluane First Nation (KFN) and Champagne and Aishihik First Nations (CAFN) each received funding from the Fish and Wildlife Branch (YFWB) for a member to interview elders, and submit a report for their First Nation.

Methods

- Lawrence Joe (CAFN Director of Lands and Resources), James Allan (CAFN interviewer) and Barney Smith (YFWB Public Involvement Biologist) prepared the questions based on topics suggested by biologists and the Steering Group.
- Many of the topics were too abstract, and questions were altered to be more general questions because elders 'do not think that way' based on the experience of James and Lawrence. For example they felt it would not be appropriate to ask an elder about patterns in wolf behaviour at the low point in the 10-year cycle of snowshoe hare numbers.
- The questions looked at beliefs about animals, trends, old ways of looking after wolves and caribou, and possible ways to change wildlife management.
- James interviewed 12 elders in the Aishihik area. Student Math'ieya Johnson interviewed KFN elders and hunters. They paid elders $50 each.
- Though both studies used the same questions, some things differed. For example, Aishihik interviews were in Southern Tutchone and taped and transcribed (in English), and the report included lists of elder quotes. Additional questions were asked about beliefs about certain animals that elders wanted to share, and sites, trails and areas were mapped. KFN interviews were in English and not taped, and included summaries of quotes as frequencies of respondents answering in particular ways.

Notes on collecting the information and ideas

- Using 2 different ways to collect information was helpful. Each First Nation used a different method, and this led to interesting comparisons in process, style, and language.
- Questions could be tested in advance to be sure they made sense, such as questions about seasons and traditional use of the land. For example, elders said they did not know where the caribou calved, as they were not in the mountains in late May and early June.
- Listing elders' quotes in a table was a very solid way of showing the results.
- Maps from CAFN interviews stored in the interviewer's home and in the CAFN offices could not be located 5 years later.

Notes on using the information and ideas

- Wolf control is a very sensitive issue. These interviews were part of a wolf control program, so great care was taken with the information. For example, researchers were very careful with maps of wolf dens and concerned about details in the reports. This also made the writing difficult.
- CAFN gave newspaper reporters a look at the draft report. Some elders had shared views about reducing grizzly bear numbers, and newspaper reports about the interviews used the headline 'Elders promote bear control'. This angered the elders.
- The interview transcripts (write-ups) were not included in the public final report.
- Sharing the interview results with technical people was difficult because scientific questions had been changed. A planned meeting with biologists to discuss the results from the interviews did not happen, as everyone was too busy and the writing up took about a year.
- Because the interviews happened after the wolf control program began, the information came too late to help design the program. But the elders gave information that helped develop the management plan for the area. Tough choices were made in setting moose population size goals for the area. Elders had spoken of very abundant moose in the 1970s, but it was difficult to convert this into numbers.

Other outcomes

- First Nation elders and leaders felt that a traditional knowledge study created another way for the community to learn about the wolf control program. It also gave people a chance to give their views on wildlife management. Household visits had also been used to explain the program and the Wolf Conservation and Management Plan.

- The study showed major changes in nature over 100 years including the end of wintering in the area by tens, and perhaps hundreds of thousands of caribou, the eruption and decline of moose, and large changes in the abundance of wolves.
- The communities appreciated the regular meetings where biologists and elders spoke about where wolves were taken, and how the moose, caribou and sheep numbers were changing.
- The elders wanted a follow-up meeting about how their information was used.

Other resources

James Allan. 1995. *Traditional knowledge report: Aishihik caribou recovery area.* Report prepared for Champagne and Aishihik First Nations and YTG Renewable Resources.

Math'ieya Johnson. 1993. *Aishihik and Kluane Caribou Recovery: A summary of Kluane First Nation traditional* knowledge *interviews and recommendations.* Prepared for Kluane First Nation and YTG Renewable Resources.

Robert D. Hayes, Richard Farnell, Richard M. P. Ward, Jean Carey, Michael Dehn, Gerald W. Kuzyk, Alan M. Baer, Craig L. Gardner, and Mark O'Donoghue. 2003. *Experimental reduction of wolves in the Yukon: ungulate responses and management implications.* Wildlife Monographs 152.

Yukon Fish and Wildlife Management Board. 2001. *Two Eyes: One Vision.* Conference summary hosted by the Yukon Fish and Wildlife Management Board, April 1–3, 1998, Whitehorse. (See description of this project *How did we get into this mess in the first place? Aishihik and Kluane caribou*, pages 64–65.)

Jean Carey. 2003. *Aishihik* Caribou *and Moose Recovery Program, 1992-1997.* MR-03-02. Fish and Wildlife Branch, Environment Yukon, Whitehorse.

Household visits explain rules, seek opinions and map all kills along a road: Moose hunting and the North Alaska Highway no-hunting corridor, 1995

Background

- In the early 1990s, residents had concerns about moose and caribou harvests on the N. Alaska Highway.
- There was no information about harvests, except for that of licensed hunters. But local people felt harvest levels were too high. The Aishihik and Kluane Caribou Recovery Steering Group suggested a 1-km no-hunting corridor along both sides of the highway.
- The Yukon Fish and Wildlife Management Board (YFWMB) supported a highway no-hunting zone if communities wanted it. Only elders were allowed to hunt in the corridor. The government implemented the corridor. But the government said they would remove the corridor if people did not respect the new rules.
- Because they know trails and access routes, local hunters have an advantage.
- Yukon Government highway maintenance staff became important observers of how much roadside hunting was happening. White River First Nation (WRFN) hired a person to patrol roads and trails in 1995. (Kluane First Nation's Wildlife Monitor patrolled in 2001 and 2002.)
- Many people worried about rising hunting levels during and following road improvements. Others said that hunting would increase when Nelchina caribou moved from the Tok, Alaska area into the Beaver and Scottie Creek areas of the Yukon in the winter.
- In the years after the corridor was implemented, conservation officers received many complaints from non-native people in other communities who could not hunt in the corridor and believed many first nation hunters were hunting along the road. The efforts to promote compliance waned as years went by.
- Barney Smith (Yukon Fish and Wildlife Branch (YFWB) Public Involvement Biologist) gave contracts to Mike Williams in the Destruction Bay area, and to the Kluane and White River First Nations to do the interviews. A later contract was let to a Beaver Creek resident, Marty Tengelis, to prepare a summary of the Beaver Creek interviews.

Methods

- Community members were hired in 1995 to interview residents of Beaver Creek, Destruction Bay and Burwash Landing about moose harvests in the corridor.
- Interviewers earned $40 per completed interview, $30 for each summary table and extra wages to complete a report. Interviewers visited homes in March to explain the new corridor, talk about rules, and find out what people thought about the corridor. They also took information about the roadside kills seen that winter along the highway, including date, sex and location.
- Study results varied. Destruction Bay interviews were thorough, but Beaver Creek interviewers did not follow instructions. Interest was low in Burwash Landing - there had been 8 other interview-based surveys that winter.
- Local people explained results of the study to government officials at community meetings.
- Highways staff reported no change in roadside hunting west of the Donjek River. They reported half as much roadside hunting between the Slims and Donjek Rivers.

Notes on collecting the information and ideas

- The term *visit* rather than *interview* is appropriate because there was much exchange of ideas. Interviewers answered questions and recorded views. Some of the interviews took several hours and happened over breakfast. However in Beaver Creek the draft interview guide was handed out as a questionnaire.
- Because other surveys were also happening in the community, some residents were confused or not interested. Interviewers must be capable, and aware of other activities.
- Small First Nations may not have the skilled workers needed to manage this kind of study. The literacy of interviewers cannot be assumed.
- Some people felt anxious about the information they gave, even though their names were never used. Each household was assigned a number that was the same in all the tables. If people wanted, they could learn their number and check to see if the information was accurate.

Notes on using the information and ideas

- The interviews were useful to find out about other harvests, not just personal harvests.
- Interviewers and researchers learned about how and why some first nation people choose not to follow hunting laws and rules. These people fell into 7 groups, and these were described in a report. This was the first description of some contemporary first nation hunting behaviours.

- Having interviewers prepare tables, write the report, and present the results to the community required varying levels of support but was useful in building community understanding of the results and in conveying the community's views.
- A map of kills in the no-hunting area shown at a community meeting created some tension and discomfort. Even though the community interviewer mentioned no names, people knew who was involved.
- As part of their contract, interviewers were to store their interview data for 5 years, keeping it confidential. This would also allow future studies to look at changes in views of individual households.

Other outcomes

- Information sharing during household visits was very valuable.
- The community took pride in the reports because they prepared and presented the information to officials.
- This was the first time rules were changed based on local information that was not supported by formal data or studies.
- Some racial tension occurred where some first nation hunters ignored the corridor. The elders-only hunting encouraged younger first nation hunters to take elders with them while road hunting.
- The study and reports did not have much impact. Funding was not available to repeat the interviews and study subsequent compliance, despite this work receiving a high priority ranking in the regional program, and the Ministerial commitment to remove the corridor if there was inadequate compliance. The prevailing view that no-hunting corridors do not work came through in a YFWMB/YFWB workshop on moose management tools in 2001.

Other resources

Elodie Kabanak. 1995. *Views of households of Burwash Landing West to White River on the North* Alaska *Highway No-Hunting Corridor.* Project report for Yukon Fish and Wildlife Branch, Whitehorse.

Mike Williams. 1995. *Views of households of Destruction Bay and Silver Creek on the North Alaska* Highway *No-Hunting Corridor.* Project report for Yukon Fish and Wildlife Branch, Whitehorse.

Marty Tengelis. 1995. *Household Interview Survey – Beaver Creek.* Project report for Yukon Fish and Wildlife Branch, Whitehorse.

Barney Smith and Dan Drummond. 1995. *Moose Harvest Within the North Alaska Highway No-Hunting* Corridor, *August 1994 to April 1995.* File report, Yukon Fish and Wildlife Branch, Whitehorse.

Area residents map where caribou winter and examine maps showing caribou seen during plane surveys: Southern Lakes woodland caribou 1996

Background

- Many people now live in subdivisions around the big lakes east and south of Whitehorse. These areas are historical winter ranges for Southern Lakes woodland caribou.
- People's activities on and around their properties will affect whether or not caribou continue to use these areas.
- As they launched the Southern Lakes Caribou Recovery Program in 1993, Steering Group members and managers planned to keep people informed. They assumed that people would read mail drop information and hear radio messages about the recovery program. They also thought people might be interested in field trips. They were uneasy about sharing map information about caribou distribution.
- To make sure the program would connect with people, managers designed a survey to find out:
  - how much people knew about maps,
  - what their wildlife concerns were, and
  - how they wanted to learn about caribou.
- Interviewers visited households in the spring of 1996.

Methods

- Survey organizers began by finding an area resident to talk with neighbours in each of the 3 rural "communities" in the winter range.
- Each of these people knew about wildlife. They were also willing to visit and interview 10 people in households in the area.
- Before interviews began, the 3 interviewers met with survey organizers and talked about a draft set of questions.
- The group changed the questions based on the kinds of answers people thought they would get. And they also changed them to make sure they would get at information that would help to shape future public information programs.
- Organizers wanted to know how people would respond to mapped information.
- Interviewers liked the 1:50,000 scale maps that showed exactly where caribou had been sighted during recent airplane surveys.

- They recommended that these maps be used with the interviews. This was agreed to, even though there were worries that people might disturb or hunt caribou if they knew their locations.
- Each interviewer selected 10 households in their area. They chose households that represented the range of lifestyles in the neighbourhood. This meant that the results of the survey could not be interpreted as being representative of the households in the area. Instead the results showed the range in views.
- They asked people about
  - Ways of learning about caribou,
  - General and caribou-specific conservation concerns, and
  - Caribou and human uses of the landscape on 3 different maps.
- On blank, photocopied maps, people marked in areas where they had seen caribou during the winter. They studied the land ownership map in detail. They often got all the family together to look at the aerial survey maps.
- When families studied the survey map, they often said that the surveys had missed animals in some locations. Biologists almost never show people raw survey data (the map with flight lines and numbers linked to the sighting data sheet) and typically only talk in vague terms about where they see animals.

Notes on collecting the information and ideas

- Interviewers soon learned that even if people had chosen to live in the same area, they had different views on wildlife, about conservation and on sharing information.
- They also had differing grasps of the language of the interview questions and understandings of the maps.
- Some knew the local area well while others did not.
- People liked the survey information sharing that took place during interviews. It made them more open to sharing their own knowledge.

Notes on using the information and ideas

- Interview information helped to fill in gaps in the aerial survey maps.
- The program used more communication methods, for example posters near mailboxes, because people said that they drew their information from a range of different sources.
- Managers learned about other wildlife concerns.

Other outcomes

- Managers use maps when they work with local people without testing if the scale, colour, background information and so on are doing a good job of getting information across. More needs to be done to find out what works. With specialists within the YFWB available to help design computer-generated maps, maps can be adapted for particular uses.
- People used the interviews as an opportunity to comment on how government is making decisions. They shared their views and opinions on how government was dealing with issues and why they thought government was doing things.
- Map-based information was added to the map and digital data base on the herd

Other resources

Barney Smith and Janet McDonald, 1996 – Learning Preferences, Wildlife Concerns and Map Literacy of Residents in the Winter Range of the Carcross-Squanga Woodland Caribou Herd – March 1996. File report, Yukon Fish and Wildlife Branch and Southern Lakes Caribou Recovery Program.

Interviews and written records used to determine use and extinction of a since-reintroduced endangered species: First Nations consult elders about the historical distribution of wood bison – 1996

Background

- Bison were abundant in the Yukon until 1000 years ago. People last saw them in the Yukon in the early 1900s in the Watson Lake area of southeast Yukon.
- A national plan to take wood bison off the national endangered species list led to their re-introduction to the Nisling River area in the 1980s.
- This success led to interest in introducing herds in other parts of the territory.
- Managers needed more information about past distribution of bison in the Yukon.

Methods

- Manfred Hoefs (Yukon Fish and Wildlife Branch (YFWB) Chief of Habitat and Research) contracted Gail Lotenberg (environmental historian) in July 1995 to look at early records that described bison history in the Yukon. In 1996, based on Gail's recommendation, this was expanded to include traditional knowledge interviews to collect information from Yukon First Nation people on where wood bison have lived in the Yukon.
- Gail wrote and phoned 6 First Nations asking if they would accept contracts to hire band members to consult elders. These 6 first nations included Carcross-Tagish, Liard, Ross River Dena, Selkirk, Teslin Tlingit, Vuntut Gwitchin, and Taku River Tlingit. Earlier work had suggested that bison were present in these areas.
- Gail met one-on-one with the people hired (interviewers) to explain what information was needed and why.
- Gail gave them sample sets of questions to ask and photographs of bison to show to the elders.
- Some interviewers met with individual elders. Others met with groups of elders.
- Elders received $50 each to participate in the interviews.
- Interviewers kept notes of answers, often on the forms the contractor provided.

- Gail also looked at evidence from aboriginal languages and archaeological investigations.
- Gail wrote a plain language summary of the interview results and included the original notes as an attachment to her comprehensive report.

Notes on collecting the information and ideas

- People told stories about bison and where they had been seen (oral history).
- Interest in the project varied among First Nations and interviewers.
- Interviewers who were both interested in the questions and used to working with elders collected the best information.
- Older interviewers seemed to do the best job.
- One First Nation asked the contractor to interview elders when the interviewer hired did not work out.
- One elder recalled a story about an animal taken that had yellow fat. Bison fat is often yellow- this suggests that unusual tissue characteristics, not just a photograph, may be useful as prompts to help people remember.

Notes on using the information and ideas

- Elders were asked how they thought their information should be used.
- They were also asked what they thought about re-introducing bison.
- The report was shown to the national bison recovery team, and to archaeologists. It helped bison experts to understand how these animals may have become extinct.
- The Yukon Bison Management Plan 1998–2003 mentioned recent interviews and described bison in the SE Yukon in the 1800s and early 1900s, but Gail's report was not cited.

Other outcomes

- In some areas it was not always clear if the animal told about was a bison or another animal, perhaps a musk ox.

Other resources

Lotenberg, Gail. 1996. *History of Wood Bison in the Yukon- A reevaluation based on Traditional Knowledge and Written Records.* Report prepared by Boreal Research Associates submitted to the Habitat Section of Yukon's Renewable Resources Department, Whitehorse.

Yukon Department of Renewable Resources. 1998. *Yukon Bison Management Plan 1998–2003.* Published by the Yukon Department of Renewable Resources, Whitehorse.

Fischer, Lisa A. 2003. *Late winter resource selection and the potential for competition between wood bison and* woodland *caribou in the Yukon.* Master's Degree project, Faculty of Environmental Design, University of Calgary. (This thesis included an appendix containing information from interviews done by Champagne and Aishihik First Nations regarding interactions between bison and caribou and other bison impacts).

Stephenson, Robert O., S. Craig Gerlach, R. Dale Guthrie, C. Richard Harrington, Robin O. Mills, Gregory Hare. 2001. *Wood Bison in Late Holocene, Alaska and Adjacent: Paleontological, Archaeological and Historical Records. In* People and Wildlife in Northern North America: Essays in Honor of R. Dale Guthrie. Edited by S. Craig Gerlach and Maribeth Murray. BAR International Series. Oxford, England. (This paper brings together the oral history information, recent archaeological research, and paleoarchaeology research to tell a story of the probable rise and fall of various bison species in the past.)

Interviews, workshops, and studies by communities and scientists monitor environmental change: Arctic Borderlands Ecological Knowledge Co-op, 1996 and ongoing.

Background

- For a long time, northern communities have wanted the environmental knowledge of their elders and people who spend a lot of time on the land to be gathered. People want this information used to watch and measure changes in the environment.
- Local people also want to know and understand what scientific researchers do in their area.
- In 1994, Joan Eamer (Head, Ecosystem Health, Northern Conservation Division, Environment Canada) organized a meeting in Dawson with many different agencies and organizations to establish a new monitoring program, the North Yukon Ecological Knowledge Co-operative. This initiative was to be linked to the new national Ecological Monitoring and Assessment Network (EMAN). The program's geographic focus was defined as the range of the Porcupine caribou herd and includes regions of the Yukon, the Northwest Territories and Alaska.
- At the meeting, people identified the 3 main issues that should be the focus of Co-op's ecological monitoring: climate change, contaminants, and regional development. Participants also decided that an important part of the Co-op should be to bring together science and local/traditional knowledge.
- The meeting participants also created decision guidelines: go slow, keep it simple, be relevant, think long-term, and economize. The guidelines are still important as the Co-op grows.
- By 1999, the Co-op had expanded its programs into Alaska and changed its name to the Arctic Borderlands Ecological Knowledge Co-op.
    - Co-op members are representatives of co-management boards and councils, Inuvialuit and First Nation councils and government agencies, Canadian and U.S. federal and territorial government agencies, as well as academic and research institutions in Canada and the United States. Participating communities include Arctic Village and Kaktovik in Alaska, Old Crow in the Yukon, and Aklavik and Fort McPherson in the NWT.
- The Co-op is run by the Arctic Borderlands Ecological Knowledge Society, a non-profit organization incorporated in the Yukon. It is a society with national status as a charitable organization, and a Board of Directors, elected annually, manages its programming.
- The Co-op has 4 parts:

- It tracks signs of change in the environment and shares this information with partners. It monitors 75 'indicators' that partners are interested in watching. Over half of these indicators have sets of information available. The data is on the website. (www.taiga.net/indics).
- The Co-op manages a Community Monitoring Program that records local knowledge about the environment. Each year, community researchers interview local experts about fish, berries, caribou, other animal sightings, weather and other things (not all interviewees are expert in all topics). The local researchers are trained, and they must complete a specific number of interviews each winter on each topic. (www.taiga.net/coop/community).
- The Co-op develops and supports ecological monitoring projects. These projects and the indicators are reviewed at annual gatherings. The Co-op's first long-term project was the Old Crow Plant Monitoring Project. Another project has looked at the condition of burbot livers. New projects are being developed. (www.taiga.net/coop/projects).
- The Co-op is a central place to find information. Partners want to be able to easily find information for a large area (northern Yukon, NWT and Alaska). A Database of Information Sources, as well as reports and research notes, are on the website. (www.taiga.net/info).

- Information is also shared among partners and communities at the Co-op's annual gatherings each February or March, following the interviews in January. People explain the results of programs and studies, and make decisions together about future programs and priorities. There is much talk about how to involve the community more. A major challenge is making sure that people in communities understand the purpose of the Co-op. Many think it is a 'government' project.
- Information in the rest of this summary details the Community Monitoring Program

Methods

- There is an annual cycle for the Community Monitoring Program. In December to January an interviewer (Community Monitor) is hired in each community. In Canada this hiring is done with the assistance of the local Hunters and Trappers Committee or Renewable Resource Council. The Community Monitors are gathered together for training. Simulations are important.
- Community Monitors are paid $2,000, in stages. They get $300 for participating in the training session, $500 when they have completed half the interviews, $1000 when they turn in all the interviews, and $200 when they provide a verbal and written summary of the survey results and

community information at the annual gathering. Their travel is organized and funded separately.

- The interview guide is about 15 to 20 pages, and changes a bit each year. One part is for berry experts, another is for caribou experts, and another is for fish experts. The Community Monitor has to submit 15 completed sections for each part. This means they need to interview more than 15 people, depending on whether the experts they interview know about berries and caribou, or berries and fish, or other combinations. There are other parts of the interview form that deal with observations of unusual weather, other animals and travel patterns that everyone needs to answer. Community Monitors complain that people say that the interviews are too long and that some questions repeat. There have been small changes to the questions asked each year.
- People who are interviewed receive a $50 gas voucher as an honorarium. Fuel is very expensive in these communities and a gas voucher was chosen as a way to encourage people to get out on the land.
- Local interviewers prepare oral and written reports to be presented to the annual meeting. It is not possible to enter all the information into a computer in the month between when they finish interviews and when they have to speak at the gathering. Many people come to the gatherings to hear these 30 to 90 minute summaries.
- At the formal and informal parts of the 3-day gatherings there is much discussion as people interpret the science-based indicators, and discuss what has been observed in other communities. There is a lot of discussion on what information the Co-op should be collecting. It is difficult to agree to not collect information in certain areas.
- The information from the interview sheets is entered into an Access database. Even after more than 5 years, ideas on how best to summarize this information are still emerging. While some readers will want a species-specific summary, others may want to look through the list of quotes to check for anything unusual.
- It is interesting to look at unusual events that people see in the weather or distribution of animals, and to look over the science-based indicators to see if the events were detected, and the other way around. Some of the indicators are similar across this huge region (like winter ice thickness), and some vary even within a community (like berry crops).

Notes on collecting the information and ideas

- Keeping the same Community Monitors in each community has been difficult. People do this interviewing because it is important, not because they enjoy long interviews or they make a lot of money. When there is a lot

of money to be made in other jobs it is hard to find people. Every year there is a glitch in one of the community interview processes.

- It is difficult to develop social indicators (within-community trends to watch). It is hard to know what these actually measure (kids' time watching TV versus time on the land) and how widely this information should be shared.
- Another approach for the community program is to have fewer people participate, but gather higher quality information. People who spend the most time on the land could be told ahead of time what to look for, and be paid for this information. Community Monitors sometimes ask for logbooks or calendars for experts to use to record ideas and what they see.
- The Co-op's success is partly because of long-term respect and friendships among partners. It is also managed in an informal way. It works well to have key community members explain the Co-op and gain community support and interest. These people are important leaders at the annual gatherings.
- Agencies frequently contribute funds to cover data collection and participation at meetings. It has been harder to raise the funds to cover administration and analysis.

Notes on using the information and ideas

- Community information gains value within the community when it can be compared to what has been seen that year in other communities. It also gains value after 5+ years when people can look to see patterns. The Co-op is now at the stage of preparing the multi-year summaries by community and between-community comparisons and packaging them so they are useful to the communities and the scientists.
- The Co-op brings together many different kinds of information, ranging from scientific data to interview results. There are few scientists and community people who can work with both sets of information.
- Another challenge is making sure researchers report to communities about what they find.
- Slow Internet connections in some communities also make it hard to access website information on the website.

Other outcomes

- People at the gatherings expect that government people there will do something about what is being reported to make situations better. Taking action to improve situations has been tough for the Co-op, as it is an information sharing tool rather than a problem-solving tool.
- There is much interest in applying the Co-op model to other areas.

Other resources

An overview of the Co-op on the Internet: www.taiga.net/coop This website links to other similar northern projects.

Gary Kofinas and the communities of Aklavik, Arctic Village, Old Crow and Fort McPherson. 2002. Community *Contributions to Ecological Monitoring: Knowledge Co-production in the U.S.-Canada Arctic Borderlands.* In I. Krupnik and D. Jolly, (Eds.) The Earth is Faster Now: Indigenous Observations of Arctic Environmental Change. Fairbanks, Alaska; Arctic Research Consortium of the United States.

Community information flows into mineral exploration and mine planning: Finlayson and Wolverine Lakes- 1997

Background

- People in the Ross River area know wildlife and mine impacts on wildlife from experience over 40 years with 4 mines. A study by Martin Weinstein described the changes the Faro mine caused in the lives and land uses of Ross River Dena.
- Their knowledge could have directly helped to plan mine-related developments in the region through regional or sub-regional land use planning or similar processes. These have not occurred.
- In 1994–1996 mining companies looked for and found ore body discoveries in the Wolverine Lake, North Lake and Fire Lake areas in the east central Yukon. Their activities were within important Finlayson caribou herd calving, nursery, and rutting ranges. (Norman Barichello's report sums up resource development activities, wildlife status and wildlife studies in the Finlayson Lake area.)
- In 1996, Cominco began serious planning for the proposed Kudz ze Kayah mine in this area. The proposed mine site is within the traditional territory of the Ross River Dena.
- Cominco's fieldwork and mine development plans minimized impacts on caribou. Much information about caribou (including some that came from the community) that made this possible was relayed in conversations between Rick Farnell (Yukon Fish and Wildlife Branch (YFWB) Caribou Biologist) and geologist Doug Eaton. Farnell had spent a decade working with the community to recover the Finlayson caribou herd using wolf control. The herd grew from 2000 to 6000 between 1982 and 1990 but declined to 4000 by 1999. (The Fish and Wildlife Branch has many files on the woodland caribou and wolf management programs and a report covering the period from 1982 to 1987. There is no summary report of the many conversations with Ross River residents and elders.)
- This development project triggered a Canadian Environmental Assessment Act (CEAA) review. This review was one of the first to try to do cumulative effects analyses and to use traditional knowledge. The Yukon Fish and Wildlife Branch and Ross River Dena began planning to address wildlife concerns in the area, some of which were related to the increasing activity in the region, and caribou declines.
- The CEAA review focused on the immediate area around the proposed mine development. This meant that it did not look at the combined regional effects of development, exploration and claim-staking work in the region or Ross River Dena traditional territory. The cumulative effects that CEAA

requires proponents examine are effects that accumulate over time, not over an area.

- The CEAA process also triggered a number of different studies and generated a metre of binders related to the project, dating from 1994 to the present, that are in the DIAND Public Registry.
- One of those studies was an archaeological report by D. A. Rutherford, hired by Norecol, Dames and Moore Inc., the Cominco consultants on the environmental review work. The sections below deal with how he gathered traditional knowledge. Unfortunately the work was of limited use. This was because of the limited scope of the questions, community fears about public release of their detailed knowledge of the area, and the site-specific rather than regional look at cumulative impacts.
- Two reports were prepared at the request of the Ross River Dena. They look at better ways to plan and assess potential developments in this mineral rich region that would address concerns and directly apply community information and values.
- A private socioeconomic agreement between the Ross River Dena Corporation and Cominco dealt with some concerns raised by elders and trappers.

Methods

- D.A. Rutherford hired Ross River Dena elder Doris Bob to interview 7 elders.
- Transcripts of these interviews are included in the report "Archaeological Reconnaissance of the Kudz Ze Kayah Project." The interviews discuss:
  - Patterns in the distribution of wildlife
  - Patterns of land use by first nation families
- Locations are not stated or are vague. Most seem centered around Wolverine Lake, not the Kudz ze Kayah project site.
- Elders flew over the area (some were unsure where they were). They also took part in briefings that were arranged as part of the socioeconomic agreement.
- In addition to the archaeological report, 2 maps also summarized information about Ross River Dena land use:
  - The base map has a 1: 500 000 scale that meant that a symbol showing a cabin covered about 15 square kilometres.
  - It identifies a few creeks and place names but showed no contours. Ten trails, 17 cabins, 6 fishing and 5 hunting areas used by the Ross River Dena were shown in an area stretching between the Hoole River, the

Robert Campbell Highway, east to a line from Fire Lake past the east end of Wolverine lake to the highway.

- The second land use map covers the area surrounding the Kudz ze Keyah property. It shows 8 cabins, 11 camps, no fishing areas, 4 hunting areas and 4 trails. There is no overlap with the previous map.

Notes on collecting the information and ideas

- People were reluctant to share details about how they used the land.
- They were also nervous about seeing information that they did provide summarized in any detail, particularly since it was to be in a public registry.

Notes on using the information and ideas

- The wealth of information within the community remains largely untapped. Some of the knowledge of wildlife and human use of the area learned over the decade of caribou work by the biologists and pilot flowed informally as advice to the geologist. The information from the community gathered as part of the more formal CEAA review contributed little to the project design or assessment.
- Community concerns about water and lands near and downstream from previous mines that were 'no longer clean' were heard, but seen as outside what could be addressed in the CEAA review or the fish and wildlife management planning.

Other outcomes

- The scope of the environmental assessment process seemed too narrow to grasp the cumulative (regional) impacts of mining developments on the region and its people.
- Martin Weinstein wrote a review of the Kudz ze Kayah environmental assessment. He said that a different model was needed that paid more attention to:
  - First Nation interests,
  - First Nation land use strategies,
  - contamination levels,
  - wildlife use of disturbed areas,
  - accident response plans
  - long term monitoring
  - recreational needs of miners at the site and their impact, and
  - increased competition from outside hunters.

- The community lacked the capacity to gather information and negotiate their concerns.
- Low mineral prices have put the Kudz ze Kayah mine on hold.

Other resources

Barichello, Norman. 1997. *Cumulative Impact Assessment of Resource Developments in the Finlayson Area*, available from the Ross River Dena and the Arctic Environmental Strategy, Community Resource Management Program.

DIAND and DFO, *Screening report of the environmental assessment of the Kudz ze Kayah Project, Cominco Ltd.*, available at DIAND, Northern Affairs Program-Yukon, Environment Directorate

Rutherford, D.E., 1995, *Archaeological Reconnaissance of the Kudz Ze Kayah Project, Central Yukon: Phases 1 and 2*, Appendix 4.3 in Cominco, 1996, *Initial Environmental Evaluation Kudz Ze Kayah Project Yukon Territory*, Vancouver; Cominco Ltd. 56 pp.

Weinstein, Martin, 1992, *Just Like People Get Lost – A Retrospective Assessment of the Impacts of the Faro Mining Development on the Land Use of the Ross River Indian People*, available from the Ross River Dena

Weinstein, Martin, 1996, *Ross River Dena Council Critique of the Initial Environmental Evaluation for Cominco's Kudz ze Kayah Mining Project (February 1996)*

Weinstein, Martin, 1998, *The Ross River Dena: A Yukon Aboriginal Economy*, Royal Commission on Aboriginal Peoples Aboriginal Economy Case Study, Ottawa, 198 pp.

Individual hunter interviews followed by individual interviews with local moose experts document movements and seasonal ranges: Moose calving areas in the Stewart River valley – 1998

Background

- In 1998, the First Nation of Na-cho Nyak Dun (NND), the Mayo District Renewable Resources Council (MDRRC) and Yukon Fish and Wildlife Branch (YFWB) were all interested in protecting known moose calving areas in the Stewart River valley near Mayo. They also wanted to document seasonal ranges and movement patterns.
- The plan was to use new habitat protection regulations allowed for by the Wildlife Act.
- That summer, the YFWB, in partnership with NND, decided to interview knowledgeable people to to identify important areas for moose.
- Conversations among the 3 parties led to terms of reference for a series of interviews in September 1998.
- Simon Mervyn, NND member, Mark O'Donoghue YFWB Northern Tutchone Regional Biologist, and NND member Lawrence Patterson, the contract interviewer, developed the project.

Methods

- The YFWB signed a contract with NND to cover some of the costs of the traditional knowledge. Terms of Reference for that funding set out:
  - the reason for the survey,
  - how people would be selected for interviews: by the interviewer and NND,
  - the duties of the contractor: conduct interviews, complete questionnaire forms with information received, and provide completed survey forms to NND and the Regional Biologist.
  - when the surveys would start,
  - when the results would be available to the regional biologist: in time to draft a habitat protection proposal for review by a Yukon Fish and Wildlife Management Board working committee
  - what would happen with the information collected: original maps and questionnaires to NND and Regional Biologist;
  - arrangements – including the need for NND approval - for release or presentation of survey results.
- The Terms of Reference did not mention:
  - Honoraria or gifts to elders,

- Contractor travel expenses,
- Translation, taping and transcription of survey responses,
- Reporting to community members, or
- An earlier set of interview maps put together by NND

- Mark O'Donoghue designed a questionnaire form that was modified by Simon and Lawrence.
- Simon and Lawrence chose 45 NND and non-native community members to interview.

Second Stage Interviews

- After the first set of interviews was completed, Mark and Lawrence proposed a second set of interviews with fewer elders and local experts to get more information about:
    - Sites,
    - Elders' experience on the land at or near these sites,
    - Blank spots on the maps: did no calving take place there or did people not know what went on in those areas,
    - Why the sites were selected and used by moose,
    - Whether moose would still use these sites if they were burned in a forest fire or if people used the area.
- Lawrence, Mark and Debbie Van Bibber (Conservation Officer Services clerk) later prepared an attractive summary of each interview. The summary contained a colour photo of the expert, a description of their experience, coloured topographic maps with ranges and boxes of text describing moose use of the ranges and movement routes.

Notes on collecting the information and ideas

First Stage Interviews

- Each of the first interviews took about an hour to complete, was conducted in English, was not taped, and was acknowledged with a small gift.
- Lawrence used GIS-produced maps with coloured elevation bands during the interviews. The map scale was 1: 100,000.
- He marked on the areas that people said were important for calving.
- He attached photocopies of this map to the interview forms so notes could be related to map details.
- Some of the people interviewed did not have expert knowledge, but their involvement showed interest in what they could contribute.
- He wrote a 3-page summary report on the interviews. It described moose calving behaviour and the importance of the sites. Most sites were near Mayo on the Stewart River.

Second Stage Interviews

- Lawrence hired NND elder and video maker Jimmy Johnny to videotape the elders as they answered the second set of interview questions. He hoped that this footage of elders talking about calving areas would help persuade decision makers that these sites needed to be protected.
- Jimmy Johnny taped only a few interviews because he was away from the community while Lawrence was interviewing people and most elders were not comfortable being videotaped.
- Lawrence audio taped the interviews and also planned to do transcripts but he was tragically killed in an automobile accident in April 1999,a few weeks after he completed the interviews.

Notes on using the information and ideas

- Information collected through the first interviews pointed out the need for more detailed questioning of people with more specific knowledge.
- Mark used the information Lawrence collected through the interviews to write a draft proposal for the Horseshoe Slough Habitat Protection Area.
- An attempt to confirm calving area locations by noting the number of people pointing out particular locations did not work because the most frequently identified calving sites were often those closest to town where most people traveled.
- The Yukon Fish and Wildlife Management Board used the proposal to test new wildlife habitat protection measures under the Wildlife Act.
- It's still not clear if this kind of information will be deemed sufficient for habitat protection regulations. There has been resistance within the yUkon Government to accept the community recommendation to permanently withdraw the Horseshoe Slough from mineral staking.
- The attractive reports for each of the 15 local experts were highly valued by the community, their families, and wildlife managers. These reports are not intended for wide circulation. The mapped ranges have not been put on to computers in the Wildlife Key Area (WKA) database because the controls the community want over use of the information cannot be guaranteed and because the information is not exactly WKA-type information.

Other outcomes

- The interview process pointed out the need for multiple interviews. What was learned at the first stage helped to focus questions for the second stage.
- This process and the outcome of the protection proposal may clarify the level of protection local people feel critical habitat areas need (marking it as key habitat or setting it aside as a full Habitat Protection Area).

- During the first set of interviews, an elder showed Lawrence a copy of an earlier survey asking questions about moose behaviour. Lawrence was unable to find who had conducted the interviews, which elders had been interviewed or what had happened with interview reports.
- Several families asked Jimmy for copies of videotapes showing their relatives being interviewed by Lawrence.
- This work highlighted differences in opinions about what kinds of habitat needed to be protected and what levels of protection were appropriate. Some moose biologists felt that moose calving habitats were widely distributed.

Other resources

Mayo District Renewable Resources Council. 2003. Proposal for the Designation of Habitat Protection Areas for Moose Calving Habitat in the Mayo Area.

Personal interviews with hunters look at how and where a population declines: moose in the Coast Range – 1999

Background

- Historical information suggests that there used to be a lot of moose in the valleys of the Coast Range area, south of Whitehorse, 20 to 50 years ago.
- Studies in the early 1980s showed that few calves and yearlings were surviving.
- These findings led to:
  - Limits on harvests by outfitters and licensed hunters, and
  - Programs to reduce the number of wolves and bears.
- Despite these efforts, the moose population has not grown a lot.
- Recent late winter surveys in this area suggest that moose are producing calves and yearlings reasonably well. But they also show that moose are limiting themselves to areas or habitats that snowmobiles and other vehicles cannot easily get to.
- Hunting regulations have shut down caribou hunting in this area for non-native people and first nation hunters are voluntarily not hunting caribou.
- Regional Management staff in the Yukon Fish and Wildlife Branch (YFWB) believe that moose population recovery will take a long time.
- It will also take an understanding of 'what once was' and 'why it went away'.
- Rob Florkiewicz (YFWB Southern Lakes Regional Biologist) designed and funded a project designed to answer these questions.
- Rick Ward (YFWB Moose Management Biologist) and Barney Smith (YFWB Public Involvement Biologist) contributed ideas.
- Kelly Hayes (a contractor with training and experience in journalism, co-management, and wildlife management) interviewed people and prepared transcripts.
- In 1989, Lawrence Joe described the results of interviews about moose, bears and wolves with 66 elders and hunters in Zones 7 and 9. His report did not describe moose in particular valleys or areas, and focused more on degree of support for various recovery options.

Methods

- Kelly Hayes began the project by reviewing earlier interview and study reports.

- From these reports and conversations with Rob, she developed a starting list of people who had lived or spent time on the land in this area over a long period of time. These people in turn suggested others until 12 had been interviewed that had lived in and hunted moose in this area over 30– 40 years.
- She told people she interviewed that their names would not be used in the final report, but quotes would be used to illustrate study findings.
- Kelly used semi-structured interviews with open-ended questions designed to address certain themes. She pre-tested the questions with a first nation elder and a government employee. As these felt like too much of an interrogation, Kelly simplified the questions into an interview guide and highlighted these in a general conversation. She taped the 30- to 90-minute interviews and later prepared transcripts. These transcripts are in the Southern Lakes Regional Management files. Participants were not paid.
- Her questions asked people:
    - where they had seen moose and in what size groups,
    - how they had used the land and how they had used moose, and
    - what they had seen people doing on the land over that time.
    - Kelly put standard 1:250,000 scale topographic maps out for people to refer to during interviews, but did not mark or record information for specific areas.
    - Kelly grouped transcript information into major categories, selecting the most compelling and illustrative comment to put in the text as a quote. Other ideas were presented in the text. The results section is about 75% quotes, each assigned an anonymous code number.
    - A group interview session with older people at an extended care facility was interesting for them, but turned up little useful information.
    - Kwanlin Dun First Nation let Kelly look through some transcripts of interviews with 6 elders. These interviews focused on general knowledge of the land and local history – not moose in particular, and did not provide much information on the decline.

Notes on collecting the information and ideas

- It was a challenge to pick the right people to interview.
- It was hard to find people with continuous experience in the valleys of the area. Population turnover has been high.
- It was difficult to find people with experience in particular areas prior to 1960.

- Kelly recommended that future work integrate these findings with information on other changes that interviewees mentioned. She also stressed the need for skills and training in interviewing, transcribing, and indexing transcript information.

Notes on using the information and ideas

- The interviews clarified some shifts in the use and abundance of moose that can be connected to other information.
- Biologists and others want to use observations from local hunters as an early alert of declining moose numbers. In this study hunters said you could bump into a moose almost anywhere in the 1960s and '70s, then suddenly in the early '80s there were few moose, many cows compared to bulls, and few cows with calves. Perhaps when animals are relatively abundant people do not pay much attention to subtle changes that reveal a decline is imminent. They really pay attention, however, when the moose are scarce.

Other outcomes

- The interviews and summary report describe the moose decline in the region and also point out some patterns in the decline.
- The report suggested no clear single cause.
- People interviewed thought the reasons for the decline were complex and that short-term moose population recovery was unlikely.
- People are likely to suggest causes for what they have seen when telling what they have seen.
- The story of the decline and an understanding of how it happened will require more information and critical thought.
- They remember where they saw moose when they were less common. When moose were abundant they moved their hands over broad areas on the map and indicated they were "all over".
- They did not necessarily remember what was going on in areas where they did not see moose.
- The proposed format and release of the report led to discussions about how to handle and communicate this kind of study. In the end the YFWB chose to publish the report as it was submitted as a Contractor's report to the YFWB in their publication series. It has an attractive photograph on the cover and is a popular report.

Other resources

Kelly A. Hayes. 2000. *Moose in Yukon's Coast Mountains: Observations and Local Knowledge from Long-time Area Residents.* Report prepared for the Government of Yukon, Department of Environment.

Lawrence Joe prepared a *Summary of Band Comments on the Management of Big Game within the Southwest Yukon* for Champagne and Aishihik First Nations and Yukon Government in 1989.

Individual interviews for maps and report on wildlife information for park management planning: Tombstone Park, 1999.

Background

- The land claims final agreement with the Tr'ondëk Hwëch'in First Nation (THFN) set up the Tombstone ParkSteering Committee (TSC) to recommend a park boundary between the 338 sq. km core area and the 2300 sq. km study area. After governments agreed on a boundary, the TSC would recommend a management plan. Starting in April 1999, the TSC met many times and had many public meetings before they recommended a boundary in November 2001. A management plan was put forward in the fall of 2002.
- Dorothy Cooley (Yukon Fish and Wildlife Branch (YFWB) Northern Region Biologist) presented existing wildlife information. Dorothy, people at the public meetings and TSC members all felt it was important to learn from people who knew the area. The TSC organized several daylong and evening sessions with groups of people who knew the area. They invited all trappers, THFN members, outfitters, members of Renewable Resources Councils (RRCs) from Dawson and Mayo, and Lands and Resources staff from THFN and the First Nation of Na-cho Nyak Dun. Additional interviews were thought to be the quickest and easiest means of gathering detailed map information given the short time frame.
- Martin Kienzler, a seasonal wildlife technician, was contracted to interview people who knew about animals in the Tombstone Park, north of Dawson. He began his work in July and completed the report by September 1999 [a record for Yukon wildlife interview work that has not since been matched].
- Some mining issues within the Tombstone Park Boundary caused a lot of controversy.
- Georgette McLeod and Debbie Nagano (THFN Heritage and Culture Department) were interviewing elders as part of a separate, larger oral history project for the first nation. This included questions specifically related to heritage sites (Tr'ochek, Moosehide, Fortymile). The timelines, focus, and questions of the 2 studies were quite different, but they tried to work together.

Methods

- Martin interviewed 47 people over 1 month to meet the strict time lines. He selected these people based on recommendations from Dorothy, conservation officers, THFN, the TSC, and his own knowledge of who knew about different areas in the region. As well, during interviews, other people were suggested who would know the area.

- Martin phoned ahead to set up interviews. Interviews took 15 minutes to an hour and a half. They took place in government meeting rooms in Whitehorse and Dawson, people's homes and places of work and other locations that were convenient.
- Shortly after starting, a decision was made that Martin would not interview THFN elders unless he accompanied Georgette or Debbie. This was to avoid overburdening the elders and asking the same questions. Martin met with Georgette or Debbie about a third of the way through his interviews and discussed methods and questions. They accompanied him on an interview with a non-native elder and he went with Georgette on an interview at Tr'ochek with a first nation elder.
- The interviews were not recorded. People being interviewed signed consent forms.
- A data sheet that was similar to the Key Wildlife Area interview form was used. Information was recorded on blank Mylar sheets with a water soluble pen which was on top of maps of the Tombstone Park Study Area at a 1:100,000 scale.
- This information was later transferred to maps for each species.
- People wanted to talk about management of the future park- they did not want to just provide information. Martin wrote down what people said about park management, and insisted that this information be given to the TSC, even though this group would not consider park management until after the boundary was defined.
- Before each interview people were told that the TSC was interested in only key wildlife spots, not places such as their "secret ram hole".
- Some people requested a second meeting, and after seeing what information other people had already given out, chose to add to their previous comments.
- Martin flew 14 hours of sheep surveys to more precisely map some areas.
- Several versions of maps were produced to allow him to pick the 1 style that would be most useful to the TSC.
- In the end 3 maps were made that differed by type of species. Martin also divided the study area into 20 blocks that "seemed to be consistent with how people described the area in terms of sheep groupings, moose winter ranges, and areas of recreational importance or access".
- For each of these blocks a summary was written that said who had given the information, wildlife values, boundary and management planning considerations that people had said were important, and sources of more information.

- Following the presentation to the committee, thank-you notes were sent to the people who were interviewed, letting them know that a second report was being produced. This letter also asked them for any comments or concerns they had on the second report.
- This second report was revised and along with a large map, shown to the TSC, in October.

Notes on collecting the information

- Martin never discussed, showed, or released any information from an individual. Lots of people gave the same information.
- Trust was an issue with this project. Some trappers felt passed over because they had not been invited to the wildlife information session coordinated by the TSC. Trappers said that if they had been invited they probably wouldn't have gone anyway due to their distrust of the system and because they "were not people who went to meetings". Some outfitters withheld information, believing if "you don't tell people nothing . . . they won't bother you".
- Martin made many on-the-spot decisions using his common sense and considering the needs of the TSC.

Notes on using the information and ideas

- Martin felt an obligation to pass on the concerns he heard on how the area was to be managed if it were to be included in the park. These comments were organized in a table by topic i.e. existing operations, hunting rights, access, mining, etc.
- The TSC valued the information. They asked for it to be mapped and for these maps to be shown at public meetings. Several people who gave information felt that the final map and report shown at public meetings should not have been as detailed and should not have been shown to so many people. These 1:100,000 maps gave point locations for cultural sites, and raisin to plum-sized ovals of seasonally important wildlife areas.
- Original maps and interview sheets are being stored by Dorothy and are only available to the TSC.
- The different approach to interviewing first nation elders is important. The flights to sites were important to pinpoint locations of sites and trails. This work by anthropologists and archaeologists complemented the work by Martin and provided useful information for park planning.

Other outcomes

- People remain sensitive about who will see their mapped information if they provide it. Tensions over the final size and management of the park have influenced people's decisions to cooperate in future mapping work. One

individual felt that his 'private' information had been released too widely and in too much detail, even after Martin and others spoke to him about his concerns.

- The information was used and appreciated by members of the TSC. They felt they had to show these maps to substantiate their recommendations.
- Over the course of the 3 years since Martin did this work, all the trappers and outfitters, as well as all but 1 individual that Martin interviewed continued to participate in the management planning. They shared more information than they originally gave, as their trust continued to grow with the TSC and the idea of a park.

Other resources

Martin Kienzler prepared *Wildlife Population and Habitat Information within the Tombstone Park Study Area*, a report for the Tombstone Park Steering Committee, Tr'ondëk Hwëch'in First Nation and the Yukon Department of Renewable Resources in 1999.

Phone and personal interviews look at environmental monitoring indicators: Community views in the 2003 Yukon State of the Environment Report- 2003

Background

- The Yukon *Environment Act* requires that the Yukon Government prepare a report on the State of the Environment, every 3 years, with interim reports in intervening years. This Act requires that traditional knowledge be used in the preparation of the report. None of the models of this type of report available in Canada have included this type of information.
- In the first report in 1995, the Council of Yukon First Nations hosted a workshop where elders were invited to share their ideas about climate change. Joan Eamer (Environment Canada, Canadian Wildlife Service's Head of Ecosystem Health in Whitehorse) and Yvonne Harris (Yukon Government Department of Renewable Resources Planner) edited the State of Environment Report and inserted quotes into the document from this workshop. Quotes from this workshop were also used in the second report, completed in 1999.
- In the planning for the 2003 report, the planning team led by Verena Hardtke (Yukon Government Department of Environment's Policy Analyst) wanted to try an approach that complemented the information based on trends in measurements taken by scientists in each topic area, with observation from community observers.
- Verena sent letters to Yukon First Nation government land and resource directors explaining the reporting process, proposed interviews, and requesting their cooperation.
- Leslie Kerr-Wedge (a contractor with training in biology, and experience in trapping, community life, and training Yukon College students) refined the survey procedures, coordinated the interviews, analyzed the results, and prepared short summary sentences. Laura Prentice (writing contractor) included these sentences in "A Community View" text boxes in the report.

Methods

- The technical experts met several times to discuss indicators they had datasets for that they felt would be useful and relevant in the 2005 report. In these discussions there were numerous comments such as "I wish we had data on...", "A good indicator for ___ might be ___, however there is no information", and "We only have data on this for Whitehorse".
- Based on these comments, Barney Smith (Yukon Fish and Wildlife Branch (YFWB) Community Information Specialist) drafted a set of indicators that community observers might notice that would look at some of these gaps.

The format was a table with the first column having an indicator as a phrase, the next few columns looking at trend (more, less, same), and the final column providing space for comments and quantitative examples of the change.

- Verena asked technical experts to review and add to the list, and to consider the approach. A few provided helpful suggestions. Several were critical of the approach, and sought more information about sampling procedures to ensure that observers would be qualified and the sampling per community would be large enough to determine how closely observers in a community agreed with each other.
- Leslie's contract began in January and she phoned each expert to get more specific ideas, added some indicators, and pre-tested the approach. Leslie obtained the cooperation of Larry Gray (Coordinator of Yukon College's Renewable Resources Management program) and they included the interviewing as a project for students in a videoconference-based distance education course.
- The work was an experiment to see how well the approach might work, and to learn how to inexpensively learn about environmental changes from community observers. It was not meant to be statistically sound but rather to be an informal inclusion of community observations.

Notes on collecting the information and ideas

- The wording of each phrase took time because it was hard to predict what community members might most reliably observe if a change was occurring, and because some changes that people might observe might be due to many factors.
- Each student received an instruction sheet and copies of the table. Students were told to pick people who spent a lot of time on the land and who were in place in the area from 1995 to the present. Students did 18 of the 60 interviews, and 9 came in by mail as self completed questionnaires.
- Students were trained to ask each of the 82 questions in the manner: "How about *'frogs with deformities'*, are you seeing more, less, the same"? or "How about *'days when big lakes are too windy for safe boating'* are you seeing more, less, the same. As the interview went on, they only had to mention the phrase. People often provided specific examples.
- There was 1 indicator phrase for air quality, 14 for climate change, 6 for drinking water quality, 3 for water quantity and quality generally, 1 for protected areas, 5 for recycling and composting, 3 for salmon, 13 for those who fished related to freshwater fish, 25 for wildlife, 5 for wetlands, and 5 for forests.

- Interviews took 20 to 30 minutes, depending on how talkative the person was. None of the questions required a lot of explaining or interpretation by the interviewer.
- It was not difficult to identify some reliable community observers in each community, however securing permission from several Yukon First Nations took some time as people were busy and the purpose of the research was not clear. Some First Nation staff were concerned that the request was to interview elders over the phone, and that their protocols for traditional knowledge research were not being followed. The State of the Yukon Environment Report is not well known, and the requirement to do this work lies outside land claims final agreements and day-to-day natural resource management activities.
- Leslie tried to standardize the time frames for the more, less, same comparisons by noting at the start "please compare 1995–2000 to 2000–2002 when answering the following questions". It is hard to know how successful this was- Leslie did not feel that it worked and that people made these assessments based on their long experience in an area. She felt that it would be better to ask people to rate abundance or frequency relative to typical years or to the most they had ever seen.
- In all, between 2 and 11 people were interviewed in each community, 60 in total. Leslie had no budget to provide honorariums or prizes to interviewers or interviewees.
- Leslie commented that telephone interviews were not always ideal, experts (first nation and others) should suggest more of the criteria phrases, and First Nation staff needed more time to assemble lists of people to be interviewed. The *less-same-more* format worked well, but people were confused by *not applicable* and *don't know* choices. Additional questions should look at vegetation and salmon diseases. Most people were happy to be interviewed and cared about these changes. Leslie felt that the work with the students in the communities was rewarding and useful, but needed more than 3 weeks. She felt it would have been possible to get numerical estimates or examples of changes.

Notes on using the information and ideas

- Leslie wrote short narratives on the patterns in particular indicator phrases for the writer to include in the report. For air quality this read "*Most people asked, perceived a reduction in wood smoke from heaters in houses located in Whitehorse/Laberge and Carcross/Tagish areas. Of those interviewed in Mayo most said there was an increase in wood smoke. In six other communities most people observed no change. A majority of people interviewed in seven communities agreed that the amount of wood burned for heat and cooking has not changed...*" For water quality one sentence was

"*Most people in ten communities saw an increase in the use of four stroke outboard motors on boats*".

- Laura noted that she worked with 6 pages of text, and put it in boxes in the text. While there had been discussion of preparing figures to present the information on small maps (for example, various shades in circles per community) the text information was left in the same folksy writing style and grouped into relevant section of the report. Laura said information on birds from organized groups of volunteers should be kept separate from less formal surveys of people's impressions. She also would have like to have had more community view information on certain topic areas.

Other outcomes

- Possible future vegetation change indicators that people thought of included inroads by new species, loss of established species, erosion effects, and effects of grazing and fire.

Other resources

The State of the Environment reports are posted at
www.environmentyukon.gov.yk.ca/soe/soe.shtml

Individual interviews examine status of 20 birds and mammals: Aklavik Inuvialuit describe numbers, range, habitat and condition, 2003.

Background

- The Wildlife Management Advisory Committee (North Slope) (WMAC(NS)) and the Aklavik Hunters and Trappers Committee (AHTC) wanted summaries of what community experts knew about various species on the Yukon North Slope.
- There had been many interviews over the years, some done before technical studies.
- The Yukon Fish and Wildlife Branch (YFWB) offered the time of Barney Smith (YFWB Community Information Coordinator) to help with this project.
- In March, Barney spent a few weeks in Aklavik and conducted about 25 hours of interviews with 10 individuals. The report was drafted in the community as the interviews were being conducted.
- The report uses scientific and common English names for each species as well as local and traditional versions. It was important for the AHTC to develop the list of Inuvialuktun names in the appropriate version and dialect, but difficult for people to agree on some names.
- The finished report was distributed by WMAC(NS) and the AHTC in November 2003.

Methods

- The HTC and WMAC(NS) wanted a process that was fast, did not consume much of their time, and that left the community in control of key decisions and the raw interview information. They wanted a polished product that celebrated the knowledge in the community and accurately conveyed what their experts could contribute about the topic. Various mockups of the final report helped everyone decide on what they wanted.
- In November 2002, elder Danny C. Gordon, a trapper, hunter, WMAC(NS) member and AHTC member, provided many suggestions about how best to do the interviewing and administer the project. He, Evelyn Storr (President, AHTC) and Lindsay Staples (Chair, WMAC(NS)) confirmed all decisions about the research process.
- Barney and Lindsay developed a simple informed consent form (see last page of report). People read and signed this after they saw a mockup of the report and could see how their information would be summarized. They could see that information for each species would be shown in table form, with columns headed *Numbers*, *Range*, *Habitat*, and *Condition*. Each

person's knowledge would be in a separate row, identified only by a letter of the alphabet.

- WMAC(NS) suggested a list of birds and animals. Biologists from the Yukon Government, Environment Canada, Yukon College, and Government of the Northwest Territories added to this. People were invited to discuss concerns about other species.
- Three experienced interviewers in the community recommended people to interview, based on where they were active in particular seasons. This selection proved to be complicated to explain outside the community.
- There were many species, many seasonal activities, and many locations so interviews focused only on what each person would know best. There was a different set of interview sheets for each person, based on earlier discussions with the 3 experienced interviewers. Each sheet was specific to the seasonal activity, location and animal (for example, late April/ early May, south of Herschel Island, grizzly bears).
- Where possible, several individuals were asked for each season/location/animal combination. People were not asked to provide status information outside of the season/location/animal "window" they were considered "expert". They had to have recent experience in this "window", not just experience in the past decades. As a result, many middle-aged hunters and not just elders were interviewed.
- There were many season/location/animal windows that were biologically impossible, and others that were possible but had no active hunters. The aim was to cover as many of the combinations as possible to determine status, keep the quality of information as high as possible, but not overwhelm anyone with too many questions.
- People looked at the set of sheets (grouped by seasonal activity). This helped them to know what was wanted and how the interview process was linked to the report.
- People enjoyed providing descriptions of typical days engaged in particular seasonal activities. These narratives provided a synthesis of their experience and allowed questions about sightings and sign of various species, and whether these numbers were changing. These narratives may have value in future monitoring.
- Interviews were not audio taped. In most cases rough notes were rewritten in pencil immediately after interviews. Individuals were phoned if the information was not clear.
- Professionals designed and edited the report, which was illustrated with photographs of the species and a colour map based on a satellite image. The report includes colour photographs and brief biographies of the interviewees.

Notes on collecting the information and ideas

- Interview sheets did not have specific questions. Each sheet had boxes for notes on range, numbers, habitat, condition and behaviour, and was specific for season, species, location, and interview. Each person's interview sheets were grouped by seasonal activity.
- Questions were mostly open ended, probing and directed. "Let's talk first about your spring bear hunts. Please tell me about the ptarmigan you see, or their sign, in the ____ area" followed by prompts related to numbers, range, habitat, condition and behaviour. Probes about numbers often used units of dozens, hundreds, or thousands.
- Barney wrote the report between interviews, adding the information from each interview into the table for each species. This identified patterns where additional or different lines of questioning would be useful.
- To demonstrate the authority of these hunters to make comments on the status of species, their biographies were included. The text in the report for each species also included a section on how people knew about them.
- At the conclusion of the interviews, people received a set of the tidied-up interview sheets and typical day narratives along with their $100 honoraria. They did not find and tell the HTC or Barney about any mistakes.
- Individuals who knew the animals but were not interviewed had a chance to look over the tables at an evening meeting. About 30 people came to this meeting and looked at posters that showed the 2 pages per species in the emerging report. WMAC and AHTC members stood by the posters and noted comments on sticky tabs with numbers that corresponded to places on the poster. These comments were added to the bottom of the species table in the final report.
- Each box in the tables reflected the original words used in the interview. Editors wanted an informal style to make the report more readable.
- Condition information was usually expressed as fat levels or the number of young (e.g. proportion with twins).
- Photographs were essential to distinguish many birds.
- Hunters grouped 2 scoter species as 'black ducks', and all mice and voles as 'mice'.
- The AHTC used a small meeting of community language experts to review and select final Inuvialuktun names for the birds and animals in the final report. Most comments from the community about the report concerned which names were appropriate.

Notes on using the information and ideas

- In many cases the information was not complete enough to describe the status for the entire North Slope. People are not active in all areas. The Alaskan (not hoary) marmot described may be a new species to Canada.
- The AHTC has the binder with all the consent forms, typical day narratives, interview sheets grouped by species and interviewee, and the various Inuvialuktun species names from various sources. The chair has the list of each person's letter code.

Other outcomes

- This project was discussed and the report distributed and well received at the 2003 North Slope Conference held in Inuvik, November 17–19, 2003.
- Lapel buttons with 7 different 5-to-10-word phrases from the report describing particular birds and animals were made. These were given out at the conference and the school. (For example, "Arrive skinny, leave 2 weeks later with much fat, even in neck and groin" = snow geese)

Other resources

The report is available at
http://www.taiga.net/wmac/aklavikreport/akreport.pdf .

QUESTIONNAIRES

Annual questionnaire seeks ratings of abundance and trend: Trappers report on mammals on their traplines - 1977 to present

Background

- Communities view active and long-time trappers as some of the most reliable sources of local information. While few trappers record sightings of animals or tracks, they are often the only eyes on the ground during the winter.
- The current furbearer management system has been in place since 1977. That's when new season dates, harvest reporting systems, training programs, and the annual questionnaire were put in place.
- There are 347 individual traplines and 12 group lines.
- Each year Yukon Fish and Wildlife Branch (YFWB) licenses 400–600 trappers and assistants. In the early days trappers and assistants worked together as partners. Now assistants usually work by themselves. Often assistants act as tenants and pay the trapline owner rent.
- Individual traplines average 250 km^2.
- Information from these questionnaires helped identify a region where quotas were used to protect marten populations.

Methods

- Each May or June, Helen Slama (YFWB Fur Harvest Technician) mails a questionnaire to licensed trappers. Trappers are asked to circle whether various species are *not present*, *scarce*, *common*, or *abundant* on their trapline. Beside this they are asked to circle if the same species are *more*, *the same*, or *less than* the previous year.
- After 4 to 6 weeks, trappers who have not returned their survey are sent another form. No other contact is attempted. About 4 of 10 trappers return their surveys each year.
- The early questionnaires asked trappers only about furbearers. In 1982 hares and microtines (mice, voles etc.) were included and in 1993 large mammals were added. There were several years where the questionnaire asked if trappers had seen cougars, or moose with ticks.
- In the 1980s Brian Slough, then YFWB Furbearer Biologist, looked at trappers' ratings by trapline and groups of traplines. He converted the ratings into numbers, calculated average ratings and mapped the information to show trappers at training courses.

- More recent information has been compiled and analyzed to provide information for the 2002 wolverine species status assessment by the Committee on the Status of Wildlife in Canada and for all species for the 2005 Yukon General Status of Wildlife report.

Notes on collecting the information and ideas

- Analyses assume that all trappers use the words *scarce*, *common*, and *abundant* in the same way. However, what is *common* in Mayo, for example, may not be same as *common* in Old Crow.
- YTG has not tried to get more trappers to report, or to find out why some trappers do not respond.
- Some trappers may find it hard to fill out the questionnaire. Older trappers, particularly first nation people, may have trouble reading the form.
- This survey has been done for over 25 years and does not cost a lot to do.
- Each year it takes about 2 days to organize the printing and mailing and 3 days to enter the data.

Notes on using the information and ideas

- Trappers want only the Yukon Fish and Wildlife Management Board, Renewable Resources Councils and YFWB staff to see the maps showing abundance results. They are afraid that hunters will target traplines where there are many moose or caribou and damage their cabins or deplete the game.
- Trappers use only part of their lines. Their trails may not represent the whole trapline.
- The questionnaire does not ask how much time the trapper spent on the trapline. When fur prices are low trappers may only trap enough to keep their line active.
- There is no easy way to compare the trappers' information with estimates from other methods such as track count transects and aerial surveys.
- It may be hard to find changes over time on a specific trapline if there are gaps or if different individuals complete the ratings on their questionnaires.
- Trappers on some lines may never respond to the questionnaire.
- Few remote lines are now trapped. Many accessible lines are only used part time.
- The same trails may not get used every year (for example, if a line is sold, or a forest fire burns part of it).
- Not all trappers sharing a group line may have the same opinions about animal numbers.

- Trappers are responsible for managing their own trapline. The questionnaire may help them stop and think about the status of animals on their trapline.

Other resources

Government of the Yukon. 1997. *Trapping in the Yukon: A Survey of Trappers Working* in *the Yukon*. Final report. Yukon Department of Renewable Resources, Whitehorse.

Slough, Brian. 2002. *Trapper Questionnaire Analysis*. File report prepared for the Yukon Department of Environment, Whitehorse. 4 pp.

Slama, Helen, Barney Smith, Thomas Jung, and Brian Slough. In prep. *Wolverine status in* the *Yukon as indicated through the annual questionnaires of trappers*. Final Report, Yukon Department of Environment, Whitehorse.

Trip-specific questionnaire monitors hunter behaviour, satisfaction, and sightings: Dempster visitor and hunter survey, 1996 and ongoing.

Background

- Hunting has been common along the Dempster Highway since construction began from Dawson in the 1960s and has increased since the highway was completed through to Inuvik in 1979.
- Regulations related to hunting have varied along this highway over the years, but have gradually become more lenient over time.
- Governments, co-management and public advisory bodies wanted information on how the regulations were working. Biologists wanted information on hunter behaviour and wildlife sightings. A trip-specific questionnaire that could be dropped off by hunters and travellers seemed an appropriate way to gather this information.
- Dorothy Cooley (Yukon Fish and Wildlife Branch (YFWB) Northern Region Biologist) led this project beginning in 1996, prior to and continuing after major changes to the hunt regulations in 2000. Martin Kienzler (YFWB Regional Wildlife Technician in Dawson), Barney Smith (YFWB Public Involvement Biologist) and John Russell (Yukon Field Services Branch Supervisor of Northern Conservation Officer Services) provided support. The Porcupine Caribou Management Board (PCMB) contributed funds for prizes.
- Almost all of the Porcupine and all the Hart River caribou taken from the Dempster Highway are taken on the Yukon portion of this highway. About 7 of 10 caribou taken from the Dempster Highway end up with Inuvialuit and Gwich'in families in the communities at the north end of the highway. The individuals who take the remaining caribou live in communities at the south of the highway, and many of these individuals are non-native.
- There is a check station at the south end of the highway that was set up to monitor harvest, and provide information to hunters either before or after their hunt on the Dempster Highway. The check station has operated since 1985. In 1999 the number of days that the check station is open was extended from 5 to 7 days, for 7 hours per day. The objectives for the check station are to document caribou harvest information during the peak of the hunting season along the Dempster Highway, and a to be a contact point between hunters and the YFWB for information exchange and collection of biological samples.
- The check station opens when caribou come to the highway and Yukon hunters start harvesting them, and stays open until the caribou and hunters leave or it is too cold to operate the station in late November / early December. Recently the Government of NWT and the Gwich'in Renewable

Resources Board started operating a check station again on the north end during peak hunting periods and they have been distributing a similar questionnaire.

Methods

- In 1996 and 1997, Dorothy asked the operator of the check station at the southern end of the highway to give out copies of the questionnaire to hunters (and visitors) as they stopped to ask about hunting on their way up or on their way south after the hunt.
- In 1999 through 2002, questionnaires were made available at the Dempster Highway check station, the Klondike River Lodge, Eagle Plains Lodge, and all district Field Services offices in the Yukon. Martin and Dorothy put up posters at all of these locations, plus the Dawson City post office to encourage hunters to take a copy of the survey from the distribution points as a means of contributing to our understanding of the needs of caribou hunters.
- Efforts to get Government of Northwest Territories Wildlife Officers and others in Fort McPherson to distribute Yukon questionnaires in the NWT were largely unsuccessful.
- The questionnaires, with minor changes, have been structured in a similar format over the years to extract specific pieces of information from the hunters. Results from the questionnaires were taken into consideration when the Dempster hunting regulations were being debated prior to 1999. During the 1997 hunting season, the questionnaire was changed to get feedback on the proposed regulation changes.
- The questionnaire is designed to obtain information from all people that travelled the Dempster Highway, either as visitors or hunters, and has been divided into sections. Some of the sections were designed to be answered by anyone that travelled the Dempster Highway that year, while other sections were specifically to be answered by hunters.
- Beginning in 2001, at the request of the Porcupine Caribou Management Board, respondents have been asked to indicate user group and settlement group (First Nation).
- Since 2000, a prize of $400 in gasoline has offered to respondents. Individuals seeking to enter the draw were asked to put their telephone number at the top corner of the form. The phone number was removed from the form, put in a hat, and a prize awarded to a randomly drawn individual. Since telephone prefix numbers are specific to communities, Martin was able to get an idea of how various communities were represented. Martin did not include the telephone number in the analysis table or analyze results by community in any other way.

- In 1996 and 1997, Dorothy prepared a file report on the results of the questionnaire. In 1999, 2000, and 2001 Martin prepared the report. Dorothy, Martin and Barney contributed ideas for modification of the form between years. This tinkering and experimentation has been useful in learning about how hunters work with trip-specific reports, although it has complicated between-year comparisons.

Notes on collecting the information and ideas

- Most of the returned surveys have been from weekend hunters from communities at the southern end of the highway, particularly those who use snowmachines. Under-represented hunters include:
  - Hunters that travel the lower part of the highway early in the morning or late at night when the check station is not open.
  - Midweek day hunters based out of Dawson because the check station is often closed by the time they are headed home and they may see the form as unnecessary on their several hunts a season.
  - Hunters from northern end communities because they may not get a copy of the survey or have a place to turn it in, or they may not feel that they should complete a Yukon Government survey given they are NWT residents. In 2001, almost one-third of all responses was from NWT hunters. The increased motivation for NWT hunters to fill out questionnaires in 2001 may be related to charges laid that year to NWT hunters for hunting within the corridor, or using snow machines before the snow was officially deep enough.
  - First Nation hunters who may not feel the questions are relevant to the way they hunt (different regulations apply and different hunting strategies) or that are more inclined to provide information to a community member in a personal interview.
  - People who travel the highway to view and photograph the caribou.
  - Hunters or travellers who feel unsafe when there are large groups of caribou and large numbers of hunters near the highway. These people simply do not go up the Dempster Highway but would if they felt safe.
- Conservation officers (COs) who patrol and intercept hunting parties have their own questions and information recording protocols. The COs have had questionnaires to distribute but few do this, mainly because it is a low priority, and it is hard to keep track of extra envelopes in a cab full of gear. There is also no point in giving surveys to parties and waiting for people to complete them because the questionnaire is best completed at the end of a trip.
- The first section of the questionnaire provided information on the number of hunters on the Dempster during the sampling period. Respondents filled in

blanks in sentences for when and where their party hunted, number of days hunted, the number in their party, and the numbers of animals they saw. Most used units of 10 or 50 for caribou groups when they saw more than several hundred.

- The second section looked at levels of satisfaction on a 5-point Likert Scale. Most respondents completed the part where they circled a number from –2 to +2 to show how satisfied they were with 10 - 15 aspects of their trip and the hunting regulations that were in place. These questions covered a broad range of topics and varied a little between years. The addition of a *not-applicable* category reduced the number of blanks because it gave hunters another choice if the question did not apply to them. Few respondents wrote comments in the space beside the topic. A few individuals circled a vertical line of numbers.
- In the third section, hunters indicated whether they sought a cow or mature or young bull, and then how many of which group they had taken. All hunters completed this section, revealing a low desire to take large-antlered bulls. Hunters who planned to take many caribou may have found this more confusing than those who wanted 1 or 2.
- The fourth section has varied greatly, and concerned frequencies of interactions between caribou and people at particular locations throughout the hunting season. Fewer hunters completed the part where they noted how far off the highway they travelled, how they used machines, and how many groups of caribou they saw. Even when asked to provide details as narratives on how they hunted each day and what they saw, there were still few responses in the completed surveys. This level of detail may be too difficult, too time consuming, or considered none of the government's business. It could also be that this type of question assumes that hunters get away from the road, whereas many hunters may just drive the road looking for nearby caribou. The response level greatly increased when the questionnaire only asked hunters to check whether they used a snow machine or hiked.
- The final section invited respondents to provide suggestions on how Dempster wildlife could be better managed, or to make any other comments they wanted. Many hunters wrote in the 'any other comments' part - mainly to describe concerns about the regulations and their enforcement. Hiking hunters were angered by snowmachine using hunters that chased the caribou away from the highway or disturbed their stalks.
- In 2001, the questionnaire had fewer recall questions and more opinion type questions. More questions on returned questionnaires were complete.
- Respondents seemed to like the draw for a $400 prize for gasoline, as almost all the surveys had telephone numbers.

Notes on using the information and ideas

- Martin completed the report in the April after the hunt and distributed copies to user community governing bodies, co-management boards, and cooperating agencies. Dorothy presented a 1-page summary of the results to the PCMB at 1 of their 2 annual meetings each year, typically as graphs showing trends in increasing or decreasing satisfaction levels over the years. She noted the bias in the sample in her presentations.
- The measured, multi-year information on satisfaction levels has most interested government people, although there are concerns about how representative the information is. The assumption is made that it is not representative of all users, but is probably representative of non-native hunters living at the south end of the highway, most of whom use snow machines. Another assumption is that the response biases are probably the same between years.
- The information on hunter behaviour and sightings contains a few surprises each year and helps to quantify the hunting system.
- The information on concerns provides a steady stream of issues for PCMB and governments to consider, and occasionally reveals incidents that require follow-up investigations by conservation officers.
- Individuals who feel that some Dempster hunting practices are unsafe or unpleasant likely do not return to hunt there. This may mean that a per-trip survey overestimates overall hunter satisfaction levels.

Other outcomes

- Hunters from southern Yukon communities often feel they are not well represented on the co-management bodies that make recommendations related to Dempster caribou. This survey has helped to make their concerns better understood.
- It has been insightful to watch how governments approach the sampling (and management) of hunters who live in one jurisdiction and who hunt in another, even when there is a formal agreement requiring co-operation.
- Discussions continue about what is appropriate hunting along the Dempster and how it should be regulated.

Other resources

Yukon Fish and Wildlife Branch. 1997 and ongoing. *Results of the Annual Dempster Visitor and Caribou Hunter Questionnaires.* File Reports, Yukon Fish and Wildlife Branch, Dawson.

See also annual summaries of the Dempster Highway Check Station, 1985 and ongoing. Available from the Regional Management office of the Yukon Fish and Wildlife Branch in Dawson City.

Interviews, questionnaires and workshop provide community information for lake management plan: Dezadeash Lake, 2000–2002

Background

- In the late 1990s Haines Junction community members approached the Alsek Renewable Resources Council (ARRC) with concerns about fish populations in Dezadeash Lake.
- The ARRC began to look into these concerns in cooperation with the Champagne and Aishihik First Nations (CAFN) and the Yukon Environment Fish and Wildlife Branch (YFWB). The ARRC took the lead on securing funding, organizing the planning, and gathering information from community members.
- Dezadeash Lake is shallow and warms in July. Lake trout seek cool water entering the lake from creeks flowing out of glaciers to the west.
- In 2001, Jody Mackenzie-Grieve began MSc graduate studies looking at trout responses to increasing water temperatures in Dezadeash, Kathleen, and Rainbow Lakes, supported by climate change research funding. In 2001 she also interviewed anglers on Dezadeash Lake to monitor harvests (creel census).
- Heidi Istchenko (then Secretariat of the ARRC) and Linaya Workman (CAFN Renewable Resources Officer) prepared a list of questions. Will Jones (then Secretariat of the ARRC) and Brigitte Geske (a community volunteer) conducted interviews to gather information from community members. Amy McKinnon (Secretariat of the ARRC) sent out questionnaires, organized the workshop with Bob Hayes (contract facilitator), and wrote the summary report. Brad Wilson (Yukon Salmon Committee (YSC) Habitat Steward) conducted additional interviews to ensure a comprehensive range of responses.
- Biologists interviewed local experts for information for lake plans for Mandanna Lake and Tatla Mun (Taltlmain Lake) as part of Special Management Area plans required in First Nation Final Agreements, and for Teslin Lake as part of fish stock assessment.

Methods

- ARRC members wanted 7 questions asked of people in the interviews, questionnaires, and workshop: 1) the kinds of fish sought, 2) month fished, 3) where fished, 4) how fished, 5) changes in fish before and after events like the construction of the highway, the 1968 oil spill and the opening of lodges, 6) locations of fishing places that were special to their families, and 7) changes in fish species over the years. Members were also interested in

information of spawning sites, seasonal concentrations of fish, movements of fish up and down the water column and between different parts of the lake, and other physical, biological and cultural information on the lake and vicinity.

- Will, Brad and Brigitte interviewed 3 first nation and thirteen non-first nation individuals between the fall of 2000 and April 2002. The interview process selected local individuals with long term familiarity with the fisheries resources of Dezadeash Lake. The interview responses were incorporated in the *Summary of Traditional and Local Knowledge Collected Regarding Dezadeash Lake.*
- The ARRC invited all the participants in the interviews and all community members to the Traditional Knowledge workshop, where all participants were given questionnaires to complete. Four non-CAFN members sent in completed questionnaires, but did not attend.
- The ARRC held the Traditional Knowledge Workshop on the evening of March 4 and all day March 5, 2002. Nine CAFN elders and members and 4 other Haines Junction community members participated. Two YFWB staff, 2 CAFN staff, the local YSC?Habitat Steward, and 7 people from the ARRC helped out.
- The facilitator put comments and concerns on large maps of the Dezadeash lake area using ovals (polygons) with numbers that corresponded to recording forms. The map scale was about 1:35,000. There were 11 columns on the recording forms for gathering local and traditional knowledge. Issues were listed on flip charts.
- Lawrence Joe (CAFN Director of Lands) later provided information from interviews he had done with elders in the 1980s and 1990s in the area as part of interviews related to land claims negotiations. The mapped information was at a 1:250,000 scale, so Dezadeash Lake was only 8 cm long on his maps.
- Amy summarized the interviews and the workshop tapes were transcribed professionally. Amy organized this information into a GIS-friendly format (software) and prepared an 8-page summary with 2 maps and 3 photographs later in April. Amy put the tapes, transcripts, recording forms, and maps in the CAFN archives.
- In the report Amy noted that further work was needed to edit transcripts, clarify map coding, learn and map traditional place names and travel routes, and gather and summarize stories about the lake area.

Notes on collecting the information and ideas

- Amy made 7 valuable recommendations in her report:
  - use a consistent design of multiple information-gathering approaches;

- have one coordinator from start to finish;
- use high quality tape recorders;
- have clear procedures and training for gathering and recording map information;
- assign a new number on the map for every comment row on the recording sheet;
- lay out the report structure prior to the workshop; and,
- structure the workshop to facilitate writing the report to make sure that all the desired information is collected.

Notes on using the information and ideas

- Most of the information on the lake was recent, and concerned trout in the summer. The information in this report provided an idea of previous years, other seasons, and other species.
- The processes and report helped ARRC members reach a common understanding of the history of how both people and fish used the lake. It was an important part of the information workshop where all the information on the lake was brought together, prior to the planning

Other outcomes

- Information from workshops and interviews is challenging to sumn arize, particularly when a variety of methods is used, and people leading the work change. These challenges may not be readily apparent to those who want the information collected and summarized, and those who have information to provide. This suggests that good design work is essential. However, this kind of study, particularly group interviews need to be flexible in order to respond to opportunities and other situations that arise, and shifting perceptions of what is required in the summary. Perhaps the work, like the learning, will be iterative, building the understanding as one question leads to another.
- The Dezadeash Lake Planning workshop was held in December 2002.

Other resources

Alsek Renewable Resources Council. 2002. *Draft Summary of Traditional and Local Knowledge Collected Regarding Dezadeash Lake 2000–2002.* Report prepared for Dezadeash lake Planning Process, Haines Junction. 8pp.

Alsek Renewable Resources Council. 2003. *Draft Management Plan for Dezadeash Lake.* Haines Junction.

Sighting Reports

Sightings to estimate grizzly bear abundance: Hunting guides report grizzly bear sightings, 1984–1986

Background

- Many outfitters argued that estimates of grizzly bear numbers used to determine grizzly bear harvest quotas were too low, particularly prior to 1985. Without an inexpensive way to accurately measure bear numbers, disagreements were frequent and could not be resolved.
- In 1985, the Yukon Outfitters Association and the Yukon Fish and Wildlife Branch (YFWB) agreed to try an approach where outfitters would record grizzly bear sightings in their concessions, and these would be examined to see how they could be used to better estimate numbers.
- Yellowstone National Park has long used sighting reports by wardens, researchers and visitors to develop a 'minimum unduplicated count of adult female grizzly bears'.
- Kluane Park has used similar grizzly bear sighting records to determine family group numbers in particular areas, which has led to temporary trail closures and camping restrictions.
- The system was deemed to be not practical due to many biases related to species and habitat characteristics, to multi-observer characteristics and biases arising from vested interests. Outfitters were concerned that maps revealed important hunting areas.

Methods

- Barney Smith (YFWB Bear Management Biologist) provided outfitters with waterproof soft cover pocket notebooks with instructions for guides. Guides were to record date, time and location, size, colour, sex (guessed), group size of bears, aspect, altitude, habitat unit, distance of sighting, and whether the bear was hunted, wounded or killed. Cooperating outfitters instructed guides to write this information in the notebooks.
- Outfitters mailed or brought in sighting reports usually written on the margins of maps. These were photocopied and originals were kept by the outfitter.
- Cor Smits (a contract biologist and hunting guide) examined 2 years of records and prepared a report. He interviewed many outfitters and guides over the telephone and in person about biases and the system.

Notes on collecting the information and ideas

- Most outfitters routinely ask guides to describe sightings of game animals and often move hunting parties to seek specific animals seen. Usually this is not recorded.
- Guides are usually not given maps. They travel the country based on routes known by guides or described by the outfitter. Camps and specific valleys have names.
- Guides usually see 1 to 6 grizzly bears over the late July to early October hunting season.
- The instructions asked the guides to record the colour of the upper side of the bear and the size of the young relative to the mother. The records usually conveyed the colour in general categories and the estimated age of the young.
- Outfitters found it difficult to collect notebooks from guides. Many guides did not record sightings consistently or at all. Six of 20 outfitters provided information by January 1986.

Notes on using the information and ideas

- There were few family groups seen per concession, mainly due to the difficulty of seeing these bears in brushy berry feeding habitats and their low numbers. There was no way of estimating the proportion seen.
- The sighting maps revealed important hunting areas that outfitters preferred to keep secret. They realized that over time the distribution of grizzly bear sightings would provide whoever might see the maps with a good knowledge of the location of trails, camps, and valleys they hunted. Outfitters and guides are usually very tight-lipped about these locations.
- In his conversations with guides, outfitters, and biologists, Cor identified many potential biases:
    - Individual bears becoming darker as their new guard hairs grew in later in the summer,
    - Differences in vegetation structure between areas and seasons that made it hard to estimate bears not seen,
    - Individual bears changing colour as they grew older,
    - Adding extra family groups to the sighting records to inflate numbers,
    - Guides not reporting some bears to get back at outfitters,
    - Inaccurate or vague location information to protect others learning about secret hunting areas, and,
    - Error or inconsistencies in judging the age or size of young bears.

Other outcomes

- Mapped locations for each grizzly bear sighting were the size of barley grains on a 1:250,000-scale map. This was about 0.6 square kilometers.
- The project was not continued.

Other resources

Smits, C.M.M. and B. L. Smith. 1986. *Feasibility of the use of observations by outfitters and hunting guides in grizzly bear population trend inventory and trend in registered guiding areas of the Yukon Territory.* Technical report TR-86-4, Yukon Fish and Wildlife Branch, Whitehorse.

People report where they see animals in unusual locations: Biologists and elders interpret odd sightings- 1993 and ongoing.

Background

- First nation and other hunters notice changes in animal behaviour and patterns.
- Traditionally, people who knew where game was at particular seasons had a better chance of surviving.
- First nations kept track of where animals and fish were normally located, and paid attention to unusual locations, behaviour and condition.
- They also performed ceremonies – such as welcoming the return of spawning salmon – to encourage animals to come to their usual places at the regular times of the year.
- In 1993, a beluga whale swam 2000 km up the Yukon River, nearly to Dawson.
- In 1993, a cougar showed up near Aklavik, about 550 kilometers north of previous sightings.
- In 1997, Jimmy Johnny, a first nation hunting guide saw and photographed a muskox in the BonnetPlume valley, 470 kilometers south of its usual range.
- In 1996, 1997, and 1998, people spotted muskoxen on the Porcupine River, 170 kilometers south of their range.
- In the mid-1990s people in western Arctic communities began to catch salmon in their nets.
- The media reported on these events, often including quotes from national species experts on the unusualness of the sightings.

Methods

- Yukon Fish and Wildlife Branch (YFWB) staff carefully recorded and filed these sightings.
- They forwarded their reports to Canadian and international specialists.
- They usually called people back to inform them about how the external expert interpreted the sighting.

Notes on collecting the information and ideas

- People will take the time to report a sighting if they believe that biologists want to hear about it, that they will be able to learn how significant it is, and if the information will be helpful.
- People report sightings of animals that they perceive are unusual in terms of when and where the animal is seen. Once they perceive that a sighting is no longer unusual, they tend to not report it. The sighting may or may not represent a continuing occurrence of the animal in an area.

Notes on using the information and ideas

- The western scientific perspective treats these sightings as individual events.
- Over time, they may be compared to similar events elsewhere.
- Through comparative study, or the experience of a recognized expert, a combination of sightings might be considered significant.
- Sightings might also be related to other unusual patterns in the ecosystem. This "related to" can be called correlations or associations, but biologists are typically cautious about making firm judgements about why an incident occurred.
- Scientists welcome unusual sightings because it helps them understand the range of behaviours in a given species. These sightings are particularly important as the environment and climate are changing and for rare species.
- Biologists may write journal articles on these events, but community people are unaware of any interest in their observations beyond the initial media coverage.
- In aboriginal traditions, people may ask elders for explanations of these events.
- Elders may respond with stories that suggest ceremonies or actions to deal with the particular animal. They may look to traditional stories to help explain what the event signifies.
- They may interpret the sighting as a potential warning.
- In some cases they might link the sighting to improper human behaviour (elders have sometimes been critical of biologists' collaring and tracking work).
- Troubles after the event might be linked to it.
- Perhaps based on media reports, community residents often thought climate change might be responsible for these kinds of events.

Other outcomes

- These sightings pointed out how different traditions can give different meanings to the same events.
- First nations people sometimes criticized the lack of action that seemed to follow the elders' accounts of, or comments on, these events.
- First nations people are likely to be suspicious or wary of new animals introduced to the landscape. A new animal in the landscape is not 'good news' or 'interesting' or an accident.
- They may be happy about the return of animals that elders' stories say used to be around.

Other resources

File reports, occurrence reports kept by Conservation Officers, journal articles and media stories capture most of these events.

Residents phone in wildlife sightings to a toll-free telephone line: Wildlife Hotline Program, Southern Lakes – 1994 and ongoing

Background

- More people live in and use the range of the Southern Lakes caribou herd than any other of the Yukon's 23 woodland caribou herds. This herd ranges from Atlin north to Quiet Lake, from Little Atlin Lake east to Kusawa Lake.
- Human activity, developments on habitat and hunting have reduced herd numbers.
- A recovery program began in 1993. This was a collaborative program involving 6 First Nations, the Yukon Government Fish and Wildlife Branch (YFWB) and local experts on the Southern Lakes Caribou Recovery Steering Group. It was housed at the Council of Yukon First Nations until 1997, then it moved to YFWB under the Southern Lakes Regional Biologist program.
- People snowmobile, ski, and mush dogs in the winter range of the herd. Boaters and fishermen spot tracks and see caribou swimming. Horseback riders and hunters see caribou in the mountains. People also see where caribou cross roads.
- Janet McDonald, Dan Cresswell and Ray Quock, (Biologists and technicians working on the Southern Lakes Caribou Recovery Program at the Council of Yukon First Nations (CYFN), thought people out on the land could collect information about the herd.
- The Recovery Program set up a reward program in 1994 to get people to report wildlife sightings.

Methods

- In the winter of 1994–1995, the program placed ads on the radio and in newspapers and put posters up in service stations. The ads asked people to phone wildlife sightings into the Wildlife Hotline number.
- Dan Cresswell and/or an answering machine answered all the calls and:
  - recorded sighting information on data sheets,
  - arranged for people to pick up their mug and decal rewards, and
  - entered callers' names in a weekly draw for prizes such as lanterns.
- The program hired a person to work on contract 1 or 2 days a week to transcribe messages from the answering machine onto a standard form with columns for sighting number, caller name, location, comment, and date of the observation.

- In the winter of 1995–1996 the program set up a dedicated toll free line so callers outside of Whitehorse did not have to pay for calls to report their sightings. Callers received a decal and a chance at a prize.
- After 1996, the program shared the toll free Yukon Government Field Services Branch "Turn in Poachers" hotline where an answering service took the call, recorded the information, and called the coordinator when the data sheet was full or in the early summer. Every fifth caller got a ceramic mug and his or her name entered in a September 1 draw for a helicopter flight. The winner of the draw flew as an observer during a half-day flight in the Southern Lakes area. They flew during the rutting season when biologists were counting and sexing caribou from the air.
- Carcross Tagish First Nation member Kelly Suits mapped the data initially. Kathi Egli and later Carol Domes (YFWB Southern Lakes Region Wildlife Technicians) looked after entering the information and coordinating the Wildlife Hotline Program. Most of the information is now in a text database and there is talk of putting it into a map database.
- From February 1994 to June 2002 there were 1274 sighting records from 611 individuals; 60% were of caribou.

Notes on collecting the information and ideas

- Advertising was not consistent since it used public service announcements and filler ads inserted by the local newspapers. When advertising increased, reporting increased.
- The dedicated toll free number was expensive.
- Failure to pay the phone bill the second winter meant that information was not collected when caribou were likely to be in people's back yards in many areas of the winter range.

Notes on using the information and ideas

- Janet prepared a draft report after the second winter. The study:
  - found migrating wildlife (e.g. otters, black bears) crossed roads at unusual locations.
  - confirmed known caribou winter areas,
  - confirmed caribou migration timing and road crossing sites
  - indicated how and where caribou spread out during the summers, and
  - suggested possible range extensions.
- The information was combined with information from patrols, airplane surveys and radio telemetry observations to form a 1:100 000 scale map of the winter distribution.

- Sightings suggested that in very cold weather, when people stayed in their houses, caribou fed very close to people's houses. They seemed to retreat from subdivision areas as outdoor activity levels increased.
- Sightings could not be used to estimate how many caribou were really in areas.
- It was sometimes hard to pinpoint sightings on the map. The quality of information varied from caller to caller. Callbacks sometimes helped to pin things down.
- Road crossing sightings were used to place signs alerting people about where to view or avoid driving into caribou.
- Sightings could also be used to locate areas where wildlife is likely to cross highways.

Other outcomes

- Program callbacks to local residents gave them a lot of information about the program. They learned how their sightings fit in with other knowledge about the caribou.
- Follow-up calls also allowed the program to understand what effort people were putting into making their observations.
- The advertising and incentives sent residents the message that both their sightings of wildlife and the wildlife itself were valuable.
- Insulated mugs originally handed out as reporting incentives became so popular that they were later sold to promote the recovery program and raise funds.

Other Resources

McDonald, E. Janet. 1996. *A Systematic Approach to Collect Area Residents' Observations of Wildlife: Yukon's Southern Lakes Wildlife Hotline January 1995–1996.* Report prepared for Arctic Environmental Strategy Community Resource Management Program Department of Indian and Northern Affairs, Carcross Tagish First Nation, Council of Yukon First Nations, and the Southern Lakes Caribou Recovery Program.

Krieger, Monica. 2002. *The Southern Lakes Wildlife Hotline 1994–2002: Key Findings and Recommendations* for *the Future.* File Report prepared for the Southern Lakes Caribou Recovery Program, and Yukon Department of Environment, Whitehorse, Yukon.

Outfitter's gift of organized mapped information on a species at 1:250 000 scale: Widrig Outfitting's maps and notes on Dall sheep habitat and numbers in the Bonnet Plume and Snake River areas, 1999.

Background

- Widrig Outfitting holds and operates one of the most remote big game outfitting concessions in the Yukon.
- It is located near the Snake River and is very hard to get to.
- Government biologists have never done a helicopter survey of sheep in this area. They have in other mountainous areas in the Yukon.
- Chris Widrig, the outfitter, has kept records and maps of sheep sightings in the area since 1986.
- They are based on 50 hours per year of personal Supercub airplane flying (2600 hours in total), and the records of his guides.
- Widrig has also spent time building trust and an honest working relationship with the community of Mayo, with governments and with the Renewable Resources Council.
- He keeps up a really high hunt quality standard.
- Outfitters usually do not share mapped information they have on sheep, mineral licks and number estimates.
- In 1999, Protected Areas planning made funds available to survey sheep in the Bonnet Plume drainage to the west of this area.

Methods

- In April 1999, Widrig wrote to Mark O'Donoghue (Yukon Fish and Wildlife Branch (YFWB) Northern Tutchone Regional Biologist) and Jean Carey (YFWB Sheep Biologist).
- His letter contained a wealth of information about wildlife in his area. He also included maps.
- The 1:250,000 maps were of 13 mountainous map blocks averaging about 1000 square kilometres in size. He marked mineral licks, well used trails to salt licks and summer ranges used mostly by ewes and lambs.
- Widrig split his letter into several headings:
- Under *Winter Range and Migration Patterns*, Widrig speculated on where the sheep wintered and how their wintering pattern and range use shifted with changes in snow depth or summer dryness.

- Under *Estimated Sheep Numbers*, he estimated total numbers and offered details on:
  - rams over 2 years of age with visible horns in a number of specific groups, and
  - ewes and lambs found within outlined core summer ranges. Those areas averaged about 15 square kilometres in area.
- He also located the areas of highest sheep densities in the 2 mountain ranges on either side of the Snake River. He also listed the 5 subzones that have no sheep.
- Widrig also noted that there were other licks used by moose and caribou. He said he had provided that information to the Renewable Resources Council earlier.
- He indicated in his letter that Val Loewen in the Habitat Section might be interested in the information.
- He put no limits on the use or distribution of the information he provided to the branch.

Notes on collecting the information and ideas

- Widrig's offer of information was unique.
- It should both build and inspire trust if the information is appropriately used.

Notes on using the information and ideas

- In later conversations arising from a letter sent by sheep biologist Jean Carey, Widrig said the branch could be used in technical work.
- "I don't want to see it posted on a bulletin board," he said, and trusted the information would be used with that in mind.
- This detailed information will help government assess the impacts of regional development.
- It points out key sheep, moose, and caribou habitat
- It has limited value to hunters since it does not identify specific basins and ridges used by rams in the hunting season.

Other outcomes

- The information is so precise and specific that it calls into question the need for a helicopter survey of the area.
- The biologists involved have to make important decisions about how this information will be stored, accessed and used.

Other resources

Chris Widrig lives in Whitehorse. His website is www.widrig.yk.ca .

Setting up a monitoring system where local experts help detect declines due to predation on calves and local overharvest: moose in the Mayo area, 2001

Background

- Regional biologists need to detect moose declines. Monitoring by aircraft is expensive and infrequent, particularly if helicopters are used.
- With so many hunters and others active and seeing moose, it is widely believed that they could detect changes that may indicate declines.
- In 2001, the Yukon Department of Renewable Resources' moose management team agreed to support a long-term project by Mark O'Donoghue (Yukon Fish and Wildlife Branch (YFWB) Northern Tutchone Regional Biologist) to learn how best to do this.
- Declines in moose can be caused by a number of different things. An increase in wolf predation may reduce calf survival to below that needed to replace animals that die. Heavy concentration of hunting in accessible areas of prime moose habitat may lead to a region-wide depletion of moose.
- This project is continuing as a cooperative effort between YFWB, the Mayo District Renewable Resources Council (MDRRC), and the First Nation of Na-cho Nyak Dun.

Methods

- The research work began with a 2-hour focus group of 4 biologists who knew about moose and hunter behaviour, and who had worked in systems where moose numbers had changed several-fold.
- Mark and Barney Smith (YFWB Public Involvement Biologist) showed them a flipchart of a map and a graph of moose numbers over time illustrating a moose population with heavy predation. They were asked to predict the shape of the curves for various population characteristics that might be built from sightings from hunters such as proportion of bulls seen with small versus large antlers, proportion of the day during which cow moose called, proportion of time bulls spent with cows and ratios such as cows seen per bull and calves seen per cow. The point was to explore which of these might change and be a sensitive indicator of changes in the population that would indicate a decline was imminent.
- The same thing happened with scenarios presented for a population of moose with heavy local hunting pressure.
- Mark and Barney taped and transcribed the session, and paid participants for several hours of work.

- In the second stage of this project, Mark prepared "moose journals" which were made up of introductory text describing the community moose monitoring program, instructions, blank forms for recording observations, and 7 maps.
- Mark approached 18 families or individuals that spent a lot of time in the bush in particular areas. He asked them to record moose sightings on sheets with columns for numbers of moose by age and sex, date and time, and comments, in the months of August, September and October. Participants were told their observations would remain confidential and their sighting journals would stay with the MDRRC. He encouraged them when he bumped into them.
- 12 families completed the moose journals. They each received an attractive ceramic mug with a cow moose graphic and a $100 gas voucher.
- In April 2002, Mark prepared a one-page summary from 12 moose journals that summarized the observations from the first season. People recorded 434 moose and 30% of the cows had calves. This handout thanked participants and invited other families to participate.
- In the second season, Mark gave journals to 16 families and encouraged them to participate in the program. Kent Sinnott (YFWB Northern Tutchone Region Wildlife Technician/Conservation Officer) offered to visit participating elders periodically to help them write down their observations.
- The program was run the same in 2002 as in 2001, except that more effort was put into talking to the participants during the fall to check on their progress, and only 5 participants (selected in a draw) received $100 gasoline vouchers.
- Mark will conduct annual counts of calves in the Mayo area from aircraft for the 3-year trial period of this program, and compare the results with the ground-based observations.

Notes on collecting the information and ideas

- Mark introduced the first 3 years as a pilot project and kept it small and simple. This recognized his busy workload and the need to learn. Concentrating only on moose in the fall also allowed community participants to get used to recording their observations without demanding too much of their time.

Notes on using the information and ideas

- Like diseases, some undesirable situations, such as declines in moose numbers, are indicated by several specific changes that people on the land may observe. These are called indicators. Some indicators are sensitive to changes at an early stage and other indicators are less sensitive. The more the pattern in the indicators is consistent with a pattern anticipated if a

system was headed for trouble, the greater confidence that there is a situation that needs attention.

- This type of information becomes more useful when it has been collected in a similar manner over a long time period.

Other outcomes

- Mark made an important design choice to ask a few rather than many people to contribute sighting information. This reduced the paper work, promotional and training work, photocopying costs, and analysis time. It also provided an idea of the type of information that could be expected from reliable people who spend much time outside.

Other resources

Mark O'Donoghue, Yukon Government Fish and Wildlife Branch, Mayo, prepared a 1-page information sheet in 2002 called *Mayo Community Moose Monitoring Project: Results of Moose Monitoring in 2001.*

Moose in the Nacho Nyak Dun Traditional Territory is an 8-page information package for participants at the community based wildlife planning meetings, May 2002. It was prepared by Mark O'Donoghue and Kent Sinnott ,Yukon Government Fish and Wildlife Branch, Mayo.

Mark O'Donoghue and Barney Smith prepared a file report called *Biologists discuss how to detect 2 types of moose population trends in a scenario-based focus group held on Feb. 21, 2001.* It was sent to participants in 2003.

Oral tradition shared by elder with biologist and anthropologist: Mrs. Annie Ned provides stories and songs about Aishihik caribou, 1982.

Background

- Mrs. Annie Ned was a member of the Champagne and Aishihik First Nations who was born in the 1890s. She was invited to speak at a 1982 conference on Yukon early human history.
- She told about seeing large herds of caribou at Kluane and Aishihik Lakes as a child. A biologist at the conference asked anthropologist Julie Cruikshank, a friend of Mrs. Ned's, for help setting up a meeting with Mrs. Ned to discuss caribou. The identity of this biologist is no longer known.
- Julie works in the Anthropology Department of the University of British Columbia. She interviewed Mrs. Ned many times. Julie writes about Mrs. Ned's talk and her meeting with the biologist in her book, *The Social Life of Stories*.
- Mrs. Ned was very interested to talk about caribou with the caribou biologist. He and Julie visited Mrs. Ned at her home on the Takhini River.
- Mrs. Ned talked about one of the last times caribou "came this direction". A man with shaman's powers was taken by caribou. His people tried to entice him to return to the human world.
- Mrs. Ned sang a song, and said, "That's the last time caribou came this way. Since then, nothing." Her words relate to a sudden disappearance of caribou that migrated to the area in winter.

Outcomes

- Julie notes that Mrs. Ned was a very curious person. When interviewed, Mrs. Ned often wondered why scientists were *really* interested in her stories.
- Mrs. Ned's reason behind the disappearing caribou is different than the Western scientific explanation for the decline of caribou in this area. The reason used by scientists is that these caribou were of the Fortymile herd and that large harvests during the Klondike Gold Rush and the 1940s caused the 2 major declines.
- The case shows the importance of spiritual beliefs and shamans in an elder's understanding of caribou.
- Julie writes that many people who work in oral tradition are worried about how this kind of information is used. She looks at the meaning of "traditional ecological knowledge" (TEK) and the politics of its history.

- Julie believes that oral history can be misused, and that people oversimplify it. She uses this example to show how challenging and inappropriate it is to take and treat Mrs. Ned's words as "TEK" on maps or in a database. She notes this separates the story from its original meaning, and it puts control of the meaning in the hands of the analyst. In this example, she suspected that Mrs. Ned's story would likely be so far outside the categories in a database that the ideas would not be included.
- This example with Mrs. Ned also shows how important it is to involve people who have experience working with elders and oral traditions when discussing wildlife situations with elders. It also illustrates a situation, commonly referred to by elders and Yukon First Nation leaders, where an elder provided information to someone but the use of this information is not known.

Other Resources

Julie Cruikshank, 1998. *The Social Life of Stories – Narrative and Knowledge in the Yukon Territory*. UBC Press: Vancouver. (The discussion with Mrs. Ned is described in Chapter 3, entitled 'Yukon Arcadia: Oral Tradition, Indigenous Knowledge and the Fragmentation of Meaning')

Elders provide ideas and approve text related to appropriate values and practices: hunting and fishing regulation summaries, 1992 – 1995

Background

- Ben Moise (Yukon Department of Environment Publications Officer) wrote and produced regulation summary booklets for hunters, fishers, and trappers.
- The regulation summary started as a brochure in the 1970s. In the 1980s it was a foldout map. In the 1990s it became a 76-page booklet with advertising.
- As land claims are settled, there are more efforts to include First Nation points of view in government communications. In the past, many of their values were ignored. Now there is more effort to share this information with hunters and anglers.
- In the early 1990s the Yukon Fish and Wildlife Management Board recommended that First Nation values and beliefs be included in the regulation summaries.

Methods

- In 1992, the "fish mothers, fish fathers" story from Catharine McLellan's book *My Old People Say* appeared in the fishing summary. This is an example of how elders and scientists may say the same thing, but in different ways.
- In 1993, quotes from First Nations people showed First Nations views on live-release fishing.
- In 1994, Ben Moise visited Art Johns in Tagish while he dressed out a caribou. He talked about how First Nation people "use everything and waste nothing" when harvesting big game. Ben read a summary of the field dressing method back to Art for his approval before printing the hunting summary. Art was paid $200 for his information. There were concerns about a delay in payment, or not enough payment, and also about paying Art each time the information is used.
- In 1995, the fishing summary included quotes from Mr. and Mrs. Atlin about "use everything and waste nothing". Ben paid them $200 and read their words to them before printing. Their daughter set up the meetings.

Notes on collecting the information and ideas

- Ben got information and quotes through his own personal contacts, not from 'official' contact with governments. He was not sure what procedures he was supposed to follow.
- The people being interviewed must understand how and when the information will be used. They must be paid fairly. There needs to be trust between them and the writer.
- The interviewer reads the text back to the elder. Before printing, the elder approves it.
- Payment for quotes used in a summary (15,000 copies) was higher than for an hour-long interview.

Notes on using the information and ideas

- Quotes from elders are used in the summaries to share values and to inform people. Sharing beliefs and stories helps explain First Nation values. It is hoped that fishers and hunters will consider these values in their own decisions and practices.
- Governments, boards, and committees trusted Ben's quality of work and his control of the writing process.

Other outcomes

- Since 1995, maps are changed to reflect new hunting rules as new land claims final agreements are signed. A special booklet is also produced that explains new rights and responsibilities of First Nation and other hunters.

Other resources

Hunting, angling,and trapping regulation summaries and pamphlets are produced annually by Yukon Department of Environment.

Using stories to develop and communicate profiles of user group behaviour: Dempster caribou hunters, 2000.

Background

- Hunters have hunted from the Dempster Highway since the 1960s when highway construction began and more intensively since 1979 when the highway was completed through from Dawson to Inuvik.
- Hunters from many communities and ethnic backgrounds hunt the Dempster. The perspectives of many of these groups are well known to conservation officers who patrol the highway and talk to hunters.
- In 1980 a no-shooting corridor was created 8 km wide each side of the highway to curtail hunting for all species. After a few years, first nation and Inuvialuit people asserted their right to hunt in the corridor, and it was narrowed to 1 km each side for all large animals except grizzly bears. The fall of 1999 was the first of a 3-year phase in where the corridor was narrowed to 500 m each side of the highway for caribou (all hunters) and for moose, caribou and sheep (non-native hunters). This followed extensive user consultations.
- Processes to decide on regulation changes for the highway involve many governments (First Nation and territorial governments in both Yukon and NWT), many communities, many groups, and many individuals. In most cases, these individuals know a few of the groups hunting the highway in detail and have perceptions of other groups that may or may not be accurate. People often blame people from other communities, and occasionally use unusual examples that are based on rumour.
- John Russell (then Yukon Field Services Branch Supervisor of Northern Region Conservation Officers) and Barney Smith (Yukon Fish and Wildlife Branch Public Involvement Biologist) worked with conservation officers and biologists who knew these hunters to create a summary of these groups of hunters, between 2000 and 2001.
- Most of the individuals who participate in Dempster caribou management do not appreciate long reports in technical language in the passive voice. Conservation officers generally do not appreciate requests to write reports.
- Stereotyping according to community and ethnicity is a common way to describe hunting (or nationality with non-resident hunters). Stories can be a useful medium to communicate hunter behaviour and orientation. Between 2000 and 2002, 2 efforts were made to tell stories to illustrate differences in the behaviour of users. This one, related to Dempster caribou worked; the other, related to Dezadeash Lake fishers did not, for a variety of reasons.

Methods

- Barney prepared information sheets with about 30 blanks for each group. He filled these in as he talked with conservation officers and others, and met hunters on the highway and during focus groups.
- Three Conservation Officers looked over and corrected these information sheets.
- Barney then wrote fictional narratives about each group in the first person from the perspective of a member of the group. These were written in a lively way, similar to the way that people would write a postcard. All contained an aspect of the behaviour of the individual that could be improved, to illustrate the range in these behaviours.
- This draft was faxed or mailed to 8 conservation officers who had experience patrolling on the highway, asking them for comments. Many made extensive comments in the margins, and filled in blanks related to firearm caliber, approximate numbers of individuals in the group, and typical numbers of caribou taken per trip and per year.
- This report was provided to the Porcupine Caribou Management Board for their use as they began meetings to prepare a harvest management plan for the herd.

Notes on collecting the information and ideas

- The collection was informal and extended over 2 years. Conservation officer notebooks include details of names, community, activity, vehicle descriptions, and what people are doing. This questioning and record-keeping helps them learn about hunters so they can fit them into groups. Over time the unusual individuals in smaller groups (for example wildlife photographers) become well known.
- The process of sorting observations into groups involves choices over how fine to split. It is important to start with behaviours seen (to group up), rather than stereotype (to describe an example of a group defined by community. For example we needed to describe a particular March hunting behaviour that involved grandparents and families taking caribou migrating north. We selected a community for the story at the end. People may feel that this is not an accurate description of how an individual from that particular community hunts. If we were stereotyping, we would look for an average behaviour or 2 from a particular community. This may not illustrate the range in behaviours or groups hunting the highway.
- Both the draft information sheets and the draft narratives provided a convenient way to collect and confirm ideas. People were comfortable with several iterations. Humour was important.

Notes on using the information and ideas

- The writing and editing process is a useful learning process for participants and helps to develop a common understanding.
- Using these as a tool to communicate behaviours that need to be improved tends to portray groups as being less law abiding and respectful than they really are.
- While readers appreciate the narratives, fiction is an unusual medium for government in published reports; communication policies and report review processes are not sure whether this is appropriate. This kind of paper might be better released as a communication product by a public advisory body after they have reviewed it.

Other outcomes

- The Porcupine Caribou Management Board Executive Secretary distributed this paper to members and reported that they found it was useful.

Other resources

Profiles of Groups Hunting Dempster Caribou, a paper prepared for the Porcupine Caribou Management Board by Barney Smith and John Russell, 2001.

Using stories to develop and communicate profiles of user group behaviour: Fisher groups at Dezadeash Lake, *2002.*

Background

- People who fish in certain lakes can be grouped according to how and why they fish there. Information on these groups is useful in determining how they may be affected by various approaches to managing fishing and other recreational and sustenance uses. Some fishing behaviours may not be sustainable.
- Fisheries are managed in 2 ways. The waters can be one of a set of High Quality Lakes where live release of breeding fish in a certain size range is mandatory to protect populations of popular fish, or as a non-designated waterway where more liberal fishing rules apply. There are few formal plans for specific lakes, and fish are not included in community-based wildlife plans.
- Public advisory bodies and processes that examine fisheries situations of concern receive good information on trends in fish size from netting studies and in some cases movements from studies of tagged fish. Information on the orientation and behaviour of fishers is usually not provided to these groups - it is assumed they know this. In the case of trout fishing off the Tagish Bridge, later interviews revealed that some participants misunderstood how people fished. In the case of the Tatla' Mun (Tatlmain Lake) Special Management Area, elders and members of the planning team scheduled presentations from fly fishers and others who live release fish to learn how and why they did this.
- Students are often contracted to do a 'creel census'. They interview fishers on particular lakes at randomly selected times and dates to allow a statistically valid estimate of the total number of fish taken. The contractors ask many questions, and learn from the conversations and observations of the anglers about how and why they fish. Often they question the same anglers on different occasions, so they try to keep the set of questions small and focused on the number of fish caught and fish released, hours fished, and gear used.
- In 2001, the Alsek Renewable Resources Council (ARRC) worked on a management plan for Dezadeash Lake. People in the region were concerned about how many trout were being released, excessive fishing at cool water areas where trout concentrated, and intensive set line fishing in the winter. This is a shallow, windy, roadside lake where over three-quarters of the fishing is by guided clients from one lodge.
- In 2002, Barney Smith (Yukon Fish and Wildlife Branch Community Information Specialist) offered to prepare a paper for the ARRC with profiles of groups using the lake to help the members prepare this plan. Summer student T.J. Grantham took on this task.

- ARRC members are not eager to read reports that are long or written in scientific writing styles.
- Stereotyping according to community and ethnicity is a common way to describe hunting or fishing (or nationality with non-residents). Stories can be a useful medium to communicate user group behaviour and orientation. Between 2000 and 2002, 2 efforts were made to tell stories to illustrate differences in the behaviour of users. One related to Dempster caribou worked; this one did not, for a variety of reasons.

Methods

- T.J. read over a similar paper describing Dempster Highway caribou hunters and made a form that would allow him to record similar information for each group of fishers on Dezadeash Lake. Reviewers added some extra information. In all there were over 36 rows of information needed to complete the form for each group.
- During trout capture studies, T.J. spoke to conservation officers, fisheries biologists, and creel census contractors who knew the lake and how it was fished. He filled in the forms as his understanding grew. Fish researchers were included as a group.
- In late July, T.J. gave the draft tables to 6 people (biologist, creel person/graduate student, conservation officer, lodge owner, and a first nation natural resource manager who had a cottage on the lake). He asked them to provide any corrections they felt would more accurately describe each group, and to add a group if they felt it was necessary. No comments came back.
- Over a 2-day period, T.J. wrote the information into 12 profiles written in a "My name is Jack and I am from California" (first person) style that described a fictional individual in one of the groups. A second draft of the report was circulated for comments to the same set of local experts and was modified following a long taped interview with one of the experts. T.J. included fish researchers as a lake-using group.
- T. J. pressured another of the local experts into providing comments. These were quite negative, and referred to discomfort working with 'make believe' reports. This review was highly critical of the information related to trout and grayling catches, determined by multiplying the daily catch in the story, by the number of days fished per trip/year by the number of individuals. This expert's views on catches were much lower than those provided by the other local expert. There were few differences in descriptions of the behaviour or orientations in the stories of each fisher group
- T.J. and Barney prepared a fourth draft of the paper that tried to find a middle ground (broad range) between these estimates. They offered to discuss the draft report with members, however no time was available.

Copies of the report were emailed to ARRC members in late November 2001 before their December planning session.

- Within 3 days, emails from 2 Council members angrily denounced the work and recommended no further discussion of the material. Another member agreed by email.
- The lake planning session proceeded.

Notes on collecting the information and ideas

- The story approach to collect information did not work with 4 of the 6 local experts. It proved difficult to locate some experts in the summer. The individuals selected may not have felt they were experts; screening criteria may have confirmed this. Reaching consensus among local experts is impossible with such low participation. Some reviewers who received a letter asking them to read over the tables were confused. One person thought it was an interview survey form.
- There were substantial differences in the perceptions of how frequently certain behaviours occurred. In this system, it may be very difficult to know what fishers actually do, and perceptions may be based on what is seen, discussed, rumours, or limited observations.
- Other tensions in this planning context threatened to derail the planning process earlier in the summer. These tensions may have made the process unworkable.
- The story approach to present information on fisher groups effectively communicated some aspects of angler behaviour and orientation.
- The 'second-hand' way of gathering information is similar to a Delphi approach but is less rigorous and the individual anonymous comments are aggregated, rather than provided separately.
- T.J. was concerned that he did not have a good understanding of some groups who fish in the winter or only fish there for short periods each year.
- T.J. chose not to describe fisher behaviours that could be improved because that would accuse individuals known in the area.

Notes on using the information and ideas

- The angry responses suggested the material be rejected, and the planning continue without it. The ARRC had a busy winter ahead and wanted to get the planning behind them.
- There was much interest and sensitivity to the information related to how many trout were caught and released. This is not surprising given the sensitivity over this topic. An appropriate source for information on fish

caught is the creel census, where the random sampling periods allow statistically valid inferences to total catch.

- These subjective profiles do not allow quantitative comparisons of scales related to attitudes, beliefs, and orientations. In these lake: fisher systems, sample sizes of many groups may be so small that this is not possible. These profiles would be useful to individuals designing more intensive studies of user groups.
- Discussions during the planning considered further work to increase the monitoring of fisher behaviour, but members realized that no one had time to do this.

Other resources

Summary of Traditional and Local Knowledge Collected Regarding Dezadeash Lake 2000–2002 (Draft report) is available from the Alsek Renewable Resources Council, Box 2077, Haines Junction, Yukon. Y0B 1L0

Dezadeash Lake User Group Profiles- Draft 4, prepared by T. J. Grantham in 2002 for the Alsek Renewable Resources Council and the Yukon Department of Environment, Whitehorse.

Management Plan for Dezadeash Lake. Recommendations to Champagne and Aishihik First Nations, Yukon Department of Environment, and Parks Canada by Alsek Renewable Resources Council. 2002.

Tissue Collections

First Nations do personal interviews and collect samples of medicine and food plants in gathering areas: Heavy metal levels in Kaska medicine and food plants- 1998.

Background

- In the 1980s, caribou from circumpolar regions were found to have high levels of cadmium (a dangerous heavy metal element) in their organs.
- Liver and kidney samples from the Yukon's Finlayson caribou herd showed levels of cadmium that were higher than other arctic caribou.
- Caribou liver and kidneys from some parts of the Yukon had high enough cadmium levels that government suggested limits on how much people should eat.
- Yukoners, especially first nation people who ate a lot of country food, were alarmed by the warnings.
- In 1990, the Northern Contaminants Program, administered by DIAND (Department of Indian Affairs and Northern Development) and the Council of Yukon First Nations (CYFN), started funding studies into contaminant levels in Yukon country foods.
- The Kaska Tribal Council wanted to sample medicine and food plants.
- Later studies found that cadmium levels in Finlayson caribou were mostly from naturally high levels in soils and forage and were not transported from industrial sources.

Methods

- In 1993 Marie Skidmore, of the Kaska Tribal Council, and Rob Florkiewicz, Yukon Fish and Wildlife Branch Liard Regional Biologist, proposed a study of contaminant levels in food and medicine plants.
- They wanted to measure levels of heavy metals in food and medicine plants. Trained Kaska staff would collect them from traditional gathering areas.
- The plan was to focus on the plant species used most often by first nation people.
- Kaska Tribal Council backed the study and obtained student salary support.
- The Federal Green Plan, Arctic Environmental Strategy and Northern Contaminants Program funded the study and laboratory analyses of heavy metals.
- Laurie Allen, position, and Rob designed a questionnaire to find out the types of plants gathered, the areas they came from and what they were used

for (food and/or medicine). Laurie had technical training from a college program as well as training with an elder skilled in natural medicines.

- They proposed to interview 20 elders and other knowledgeable residents from Ross River and 20 from Watson Lake.
- They paid people they interviewed a $50 honorarium
- They told people they interviewed that their plant information and collecting sites would not be told to others or mentioned in reports.
- Laurie, whose mother knows about natural medicines, was chosen to do the interviewing in the Watson Lake area. Russell Sterriah was chosen to do the interviews in Ross River.
- Both interviewers learned interviewing techniques, plant identification and sampling procedures before the project started from Rob Florkiewicz and from their personal experience.
- Gamberg Consulting coordinated tissue analysis and data.
- Allen and Sterriah collected a total of 110 samples from 39 plant species.
- They dried or froze the samples and shipped them to outside labs for measurement of the levels of 21 elements.
- Organochlorines were not measured in this study since they are fat-soluble and are not normally or usually found in plants

Notes on collecting the information and ideas

- It was very important to find interviewers who the people considered trustworthy.
- Interviewers gathered information on how people prepared the plants, how they used them and how often, but did not include this in their reports. They used this information to figure out the plants and growing areas to be sampled.
- Laurie did most of the sampling and collected most plants from actual personal collection areas or from similar sites.

Notes on using the information and ideas

- Many first nation people were concerned that their information might be misused or used by pharmaceutical companies for commercial gain, so information on plant preparation and use was not included in reports.
- Despite this, the location of one onion-collecting site did become known in the community and there was damage to that site.
- Information on how often plants were used helped decide what plants would be sampled.

- The report authored by Rob Florkiewicz, Laurie Allen and Mary Gamberg used a table to summarize the average levels and ranges of 4 metal elements felt to be of most concern. None of the plants sampled contained metals at levels that were a known health risk.
- Copies of the report went to the Kaska Tribal Council, both First Nations, and to the Northern Contaminants program.
- Further distribution of the report was left to the discretion of the Kaska Tribal Council.

Other outcomes

- A workshop planned to look at the differences in plant use between the 2 First Nations communities did not take place. Individuals instead got informal information on the results of the study at community meetings or from First Nation leaders.
- The spread of information that was supposed to be kept confidential was a problem. Collection sites should be treated as confidential personal property, even if others in the community know about them.

Other resources

Annual reports for the Northern Contaminants Program are available from DIAND and CYFN.

Robert Florkiewicz, Laurie Allen, and Mary Gamberg. 1998. *Contaminants in Plants Used as Traditional Food and Medicine by Kaska First Nations in the Yukon*. Report prepared for Kaska Tribal Council and Northern Contaminants Program.

Hunters help assess condition of killed animals: Porcupine Caribou body condition studies 1987 and ongoing

Background

- The Porcupine Caribou Body Condition Monitoring project records the general health and fatness of caribou. This is important to know so all the groups involved in managing this herd can estimate the rates of birth and survival of calves, and the condition of caribou range.
- In 1987, Anne Allaye-Chan (a University of Alaska Ph.D. student) developed mathematical equations to estimate the body weight, body fat and body protein for adult cow caribou, based on measurements and fat levels in tissues taken from dead caribou. The idea was to come up with a system that would work with caribou taken by hunters.
- Based on the science in that study, Dorothy Cooley (Yukon Fish and Wildlife Branch's Northern Regional Biologist) began getting caribou samples and monitoring condition in 1991. Between 1991 and 1999, Dorothy hired local hunters to find, take, and help her sample about 25 cow caribou in each winter. Some years it was hard to get enough samples because of the caribou movements and location, and the availability of funds. The meat from the 0 -45 caribou taken each year went to needy families.
- In February 2000, a number of caribou biologists met in Whitehorse and develop a system that could be used by hunters across the north to track the body condition of any caribou herd. The system they came up with uses a decision key of 2 fat measurements (back fat depth and leg bone marrow fat) to predict how likely the cows are to give birth.
- Dorothy and her colleagues agreed to try a system so that they received the samples needed for the scientific equations, the hunters' opinion of condition of the caribou, as well as information for the decision key.

Methods

- Dorothy contracted local Renewable Resources Councils (RRCs) to administer the program each winter and to hire hunters to collect tissues and take measurements.
- Dorothy trained the hunters so they were certain about the procedures to cut out and store the bones and organs, take the measurements, and fill in the forms.
- The RRCs paid hunters for each caribou sampled, rather than wages per day. This allowed better financial control and more samples.
- In 2002 the project recorded information on about 25 indicators. Of these, hunters took 2 measurements, recorded another 6 bits of information and

turned in 3 samples. The rest were lab measurements made by biologists from the samples hunters provided.

- Hunters also wrote down their opinion on the condition of the caribou using a common scale so that 2 ways of looking at condition could be presented.

Notes on collecting the information and ideas

- Picking and training reliable hunters was important. The hunters had to follow the rules. For example they had to take a number of caribou that were typical of the adult cows they encountered - not those without calves or those in better condition. There is no way of knowing if some hunters followed different rules. This project is heavy on science, theory and statistics. It has been difficult to explain to hunters in layman's terms how the information they collect will be used. Hunters need to understand the science, and biologists need to understand how the hunters are judging condition.
- In 2002/03, hunters measured back and marrow fat of the cow caribou they took, for the decision key. The results from the caribou taken by hunters were compared to those taken in the sampling process.
- If, over time, the decision key works well on the hunter kill sample, Dorothy will switch completely over to this system so hunters would not have to measure anything or submit any samples at all. This key could then be used by any hunter for any caribou herd across the north.
- Biologists used to do collections at the same time for other caribou projects such as blood samples, contaminant samples, and parasites. When the project is turned over fully to the hunters, these other projects may get fewer samples unless the hunters are trained to bring in these tissues as well.
- In 2003, the Porcupine Caribou Management Board (PCMB) recommended that hunters avoid taking cow caribou in an attempt to reduce cow mortality and help address the decline in the herd. It is unknown how this recommendation will affect the body condition monitoring study.

Notes on using the information and ideas

- Although the project has information back to 1987, not all of the information was recorded consistently over that time. The number of measurements recorded dropped from about 57 measurements in 1991 to 25 in 2002. The key used 2 indicators (backfat depth and leg bone marrow fat) but recorded only the result (dying, poor, good or excellent condition).
- Cows from the Porcupine herd have not been not surviving as well or producing as many calves as caribou from other herds, making this herd less resilient to hunting and stresses. Hunters generally see much variation

between years in numbers, so it is hard to tell how the herd is doing. Taking a close look at condition may help communities become more aware of this.

Other outcomes

- The 2003 PCMB recommendation to reduce harvests of cows may reduce opportunities for monitoring female caribou fat levels.
- The Government of the Northwest Territories started to gather body condition tissues and information in a similar manner from Bluenose Herd and the Peary Caribou.

Other resources

Allaye-Chan, A.C. 1991. *Physiological and ecological determinants of nutrient partitioning in caribou and reindeer.* Ph.D. Thesis. University of Alaska Fairbanks. 125 pp.

Gerhart, K.L. 1995. *Nutritional and ecological determinants of growth and reproduction in caribou.* Ph.D. Thesis. University of Alaska Fairbanks, AK. 147 pp.

Gary Kofinas, Don Russell, and Bob White. 2002. *Monitoring Caribou Body Condition: Workshop Proceedings.* Technical Report Series Number 396. Canadian Wildlife Service, Ottawa.

Dorothy Cooley, Fish and Wildlife Branch, Dawson City, Yukon is preparing a *Summary of the Porcupine Caribou Body Condition Study, 1989 to 1998* as a file report.

Nine systems reduce loss of knowledge of ecosystems when staff leave – regional biologist and conservation officer turnover, 1998 – 2002

Background

- Yukon Conservation Services Branch (YCSB) has a long history in 8 of the 9 districts where they currently operate. In all districts, except Old Crow, they have part- to full time secretarial support. Conservation officers (COs) create files of occurrences that document complaints or public reports, case files that document investigations, and annual district operation plans that plan patrols. They do not prepare annual reports.
- The Yukon Fish and Wildlife Branch (YFWB) used to only have a core of biologists based in Whitehorse. They specialized in particular species. The exception was a period in the late 1970s when the Branch had a biologist and a technician in Dawson focused on Porcupine caribou.
- In 1991, the YFWB set up a regional biologist position in Dawson City. Five more positions followed: Watson Lake (1993), Haines Junction (1995), Southern Lakes (1997), and Mayo (1998).
- Biologists filling the positions not only had good scientific and technical skills, but they also worked closely with conservation officers and local residents, and learned from them. They applied their regionally developed understandings to plans, studies and management recommendations.
- When staff leave a regional office they are often replaced with people not familiar with the region. There has been no formal method to transfer understandings and local knowledge. Regional biologists are not required to prepare annual reports or to compile regional species status reports (like the annual Alaska Fish and Game Department Survey/Inventory Reports).
- The wealth of local regional knowledge learned through from interviews and discussions is usually not available to new staff in written form. Due to priorities forced by heavy workloads, final project reports are usually not completed. This means that much information needs to be communicated in verbal form, or it needs to be relearned through interviews with the same local experts, if they are still available and willing. Other people in the community such as Renewable Resources Council members, RCM Police, Forestry, Fisheries and other agency staff are very helpful. The district clerks and deputy COs in the YCSB offer much informal support and training.
- This summary briefly describes 9 approaches to inform new regional biologists and conservation officers.

Approach 1. Joint road and river patrols

- Conservation officers typically show their replacements accessible sites in the district during road and river patrols they do together. These allow much information to be transferred that is specific to sites and individuals. As much as possible, these patrols extend over all seasons, so there is time to learn, to ask questions, and to compare observations.

Approach 2. Joint flight over region

- In the Liard Region, in 1998, the Regional Biologist position was vacant for 6 months before it was filled. The previous biologist, Rob Florkiewicz, arranged for Aaron Foos (wildlife technician) to take Jan Adamczewski (the new regional biologist) on airplane flights looking for collared moose and caribou. They covered 60 percent of the region. This allowed Aaron to point out many features and locations, and Jan to inquire about particular habitats and areas. It is rare to have project funding that would allow this kind of orientation.

Approach 3. Personal introductions to local experts

- During joint road and river patrols, new biologists and conservation officers are personally introduced to agency staff and local experts. They receive information about the nature of the expertise and experience that these individuals can offer.

Approach 4. Binder of local information

- In the Watson Lake region, Jan found a binder of information collected from local residents that Rob had prepared. It contained photocopies of map sections. These maps showed sites and outlines of areas with dates and notes on why they were important. It was intended to be a work in progress. CO district operation plans are similar to this.

Approach 5. Map set with notes in margins that remains in region

- COs carry a roll of 1:250 000 maps in the cab of their trucks and make notes in the margins on trails, camps, and important wildlife concentration areas. These rolls of maps stay in the district for the new conservation officer.
- Janet McDonald (YFWB Caribou Technician) created a similar set of maps related to caribou observations over many decades during her work in the 1980s. These maps have extensive notes in the margins.

Approach 6. Meetings with species specialists and others

- There is frequent exchange of information between regional biologists and COs. The extent to which they do patrols and fieldwork together varies quite a bit.

- New regional biologists arranged meetings with species and other specialists to learn about their new regions. These extended over several years. Some of these meetings related to the preparation of species-specific summaries for community-based wildlife management plans, and others related to the allocation of funds for projects in the region.

Approach 7. Portable GPS/GIS system

- In 2001, Kris Gustafson (YCSB Sr. CO, Training and Standards) and Gerry Perrier (Department of Renewable Resources GIS programmer) began a project to develop a portable handheld system that would link to both satellite- (to pinpoint locations) and to a map-based source of information (details on each location). This would allow precise mapping of trails and sites, and storage and recall of a variety of information on these sites.

Approach 8. Support on request via contract to a retired biologist and other staff

- In the Kluane Region in 2001, Michelle Oakley (new YFWB Kluane Regional Biologist) was able to tap into the extensive local knowledge of many individuals who remained active in the region. These included conservation officers, wildlife technician, species specialists, game guardians, First Nation resource managers, park wardens and pilots. As well, as a resident in the region prior to her appointment, she knew much about the region. The unique part of this transfer was her access, via a yearlong contract, to the previous biologist who remained in the region. This more formal arrangement allowed for a smooth exchange of information, and Michelle could make requests without feeling guilty she was asking for a free service from a busy consultant.

Approach 9. Review of file and project reports

- The files available to regional biologists typically contain:
    - summaries of telemetry studies,
    - surveys,
    - proposals for management actions
    - proposals for research and
    - proposals for regulations changes.
- There is often very limited local information in these short papers. Typically any summaries of interviews contain very limited information on the methods used in the interviews, and since it has been rare to audio tape interviews, there are no tapes and transcripts available for more detailed study.
- Some map-based data sets are useful such as the Key Wildlife Areas and raptor nest locations. Lake-specific files in the YFWB Fisheries section contain information from net sampling and harvest interviews with anglers.

Outfitter quota files increasingly contain quite a bit of information in text form about numbers and distribution of moose, caribou, and grizzly bears.

Notes on using the information and ideas

- Regional biologists feel it takes about 1–2 years to feel they know the region well enough to be effective in most of their roles. For Conservation Officers this is 1–3 years. Information transferred to new biologists and conservation officers speeds this up.

Other outcomes

- Hiring systems do not allow for specific overlap of incoming and outgoing people. This means that important knowledge is lost to the Branch if people who leave regional positions live far away. Efficiencies created by overlap probably far outweigh perceived cost savings of not permitting this.

Determining the relationship between values in the community: Teslin semantic differential interviews, 1999.

Background

- In the 1990s the Teslin Renewable Resources Council (TRRC) often received criticism from within the community that it's recommendations did not represent community values. The TRRC was unsure how to respond to plans for logging, a new park, and in how to determine representative values in planning for forest management, wildlife management, and overall land use in the Teslin Tlingit traditional territory.
- The TRRC asked for help from Gerry Ewert and Paul Harris (Director and Senior Information Officer of the Yukon Government Bureau of Statistics) to do a survey that looked at the values of people in the traditional territory. The TRRC wanted to be able to speak with authority about peoples' values.
- This is the most comprehensive quantitative study on community values that has been done in the Yukon. It is one of a few in the world that has used the Galileo Model and semantic differential method.

Methods

- Between 24 March and 25 June 1999 there were 7 meetings and a community open house to discuss the project. The Bureau recommended the Galileo Model as a way to get unbiased information- that is the questions are difficult for people to steer the results to a particular perspective.
- Between June and September 1999, 33 individuals were interviewed, mostly in person about local renewable resource issues. Analysts used a text-analysis program to look for words that represented "topic concepts" (e.g. water, the land, the bush, wildlife)
- There were 3 meetings between August and October to discuss the results and the phase 2 survey.
- Paul and Gerry trained the interviewers in how to introduce the word-pair questions, using 4 examples, and people understood what they were supposed to do. In November and December, trained local researchers interviewed 308 adults over 18 years of age in all households. They asked them 120 questions each.
- The question format was: "If Garbage Dump and Good are considered to be 100 units apart, how far apart or different do you think the following things are from each other: The Land and Water, ...[and 10 other pairs of concepts].

- The TRRC did not want information collected or analyses done that would compare subgroups, like TTC members versus others. They also wanted all households and all adults to be interviewed, not a sample.
- The Galileo computer program analyzed the word pair difference part of the survey. If the numbers everyone provided are thought to be distances, then the program calculated how far apart and how close the 15 concepts were to each other and to GOOD. The report summarized these average distances on bar charts and hired an artist to make a 3 dimensional representation that had all the concepts as planets in space.
- Over several meetings with Gerry and Paul, Council members understood the bar graphs and discussed patterns. At the end the Council members found the results pretty much confirmed what they thought. This helped them feel more confident proceeding with the forest, wildlife and other planning.
- The Bureau presented the results to the TRRC in the spring of 2000 and wrote a 275-page report.
- There were 5 additional questions provided by the partners in the survey related to their interests in learning about fish and wildlife issues, support for a new national park, visions for the Teslin Tlingit Council, land management issues, role of the Teslin Tlingit Council in land management and additional comments. The Bureau provided the partners with the raw information.

Notes on collecting the information and ideas

- The Bureau pays much attention to doing research in a professional manner. They kept other government departments at arm's length, and took direction from the TRRC. They took the time to explain the procedures and results. While they realized a sample would be appropriate and sub-group comparisons might be useful, they respected the direction from their clients.
- The project cost $90,000.

Notes on using the information and ideas

- This is a difficult survey to explain. People need to take the time to understand what the relative distances mean in the bar graphs, and work through many 2 dimensional comparisons.
- Value differences are not easy for groups and individuals to work through, even with survey information showing the patterns as distances averaged across all the adults in the community. It is difficult to design programs, particularly economic development programs so that they actually meet value concepts close to 'good' such as small scale, the land, the water, wildlife, and youth.

Other outcomes

- The wildlife plan was completed in 2001; the forest plan and land use planning are underway. The park proposal was not advanced.

Other resources

Talking to the people March 2000, a report prepared for the Teslin Renewable Resources Council by the Government of Yukon, Executive Council Office, Yukon Bureau of Statistics. Also see short plain language version prepared by Paul Harris of the Bureau of Statistics also prepared a short plain language version.

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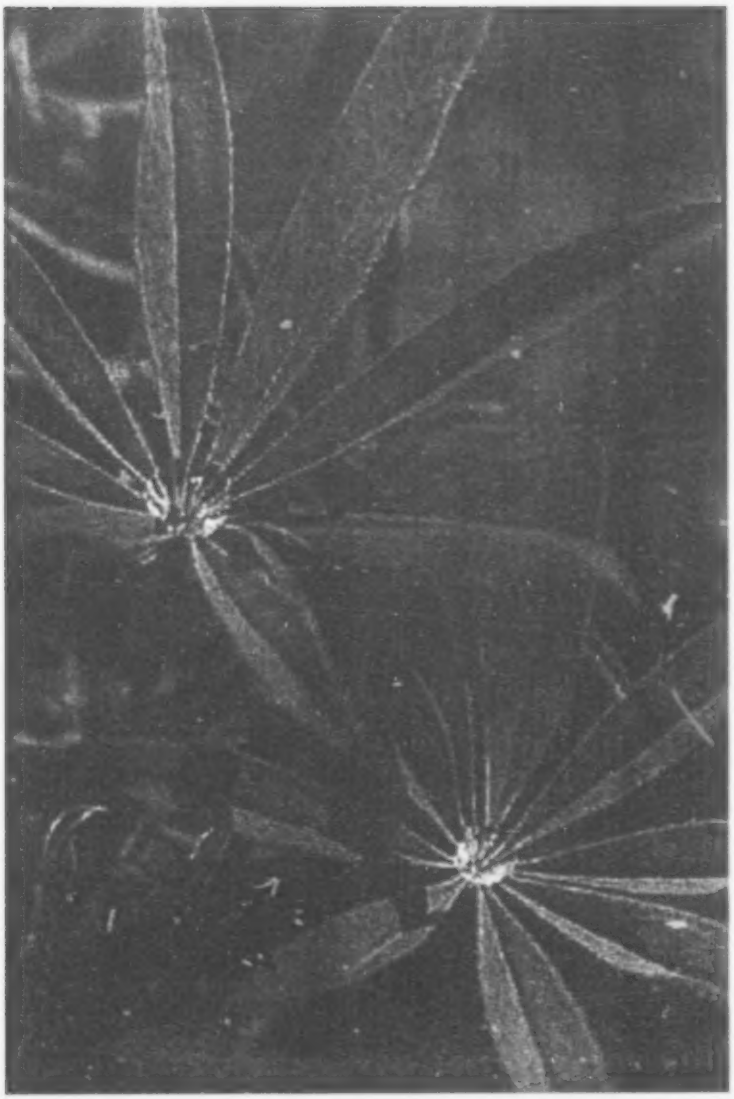

Note: terms and concepts are referenced only once for each case study. The terms may appear on more than one page of the study.

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